



CEO DUALITY AND FIRM PERFORMANCE IN THE SHIPPING SECTOR

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ABSTRACT

One of the most strongly debated issues in the corporate finance is the CEO duality. Many researchers in their reports try to explain what kind of leadership is better, the dual or the non-dual. This study sheds light on the extent to which the corporate leadership structure affects corporate performance, especially for firms in the shipping industry. The research which is carried out, uses four main variables of firm performance in the shipping sector; return on equity, return on assets, return on invested capital and earnings before interest, taxes, depreciation and amortization are generally thought to be reliable ratios of performance. The empirical results do not show a significant relationship between CEO duality and firm performance in the shipping sector

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INTRODUCTION

It is true that nowadays the modern corporation is characterized by separation of ownership and control and this situation provokes conflicts of interest between managers and shareholders. The role of the board of directors is to ensure that these conflicts could easily be resolved and that management decisions lead to the increase of shareholder's welfare. The main activity of board of directors is to represent owners and act to their advantage. Consequently the board is a crucial part of the corporate structure and of corporate governance.

Every country in the world has its own way of doing and regulating business and therefore it has its own corporate governance system. Due to this diversity of governance systems, there are significant differences in the structure of every country's corporate governance rules. However as researchers indicate from period 1999 to 2003 hundreds of firms converted their leadership structure from dual to non-dual, whereas a much smaller number of organizations converted their structure in the opposite direction. This recent trend is mainly attributed to several cases where CEOs found to abuse their tremendous power at the expenses of the firm and the shareholders. Nevertheless, until yet empirical evidence towards the relationship between the dual or non-dual structure in the organization and the firm performance, is inconclusive.

Additionally CEO duality is one of the factors in corporate governance that is different all around the world. CEO duality concerns the situation when a person is simultaneously the Chief Executive Officer (CEO) and the Chairman of the Board of a company. In some countries CEO duality does not exist while in others it can be taken for granted. For instance, in 1987¹ Dalton and Kesner studied a small sample of US and UK firms and found that 30% of the UK companies had the same person

¹ Dalton, D.R., Kesner, I.F., p 39.

as chairman and chief executive officer whereas in the USA the corresponding figure was 82%.

Many papers are dealing with the matter of CEO duality (Boyd, 1995; Finkelstein & D'Aveni, 1994, p. 422; Rechner & Dalton, 1991). This issue obtain such significant importance due to the failures of corporate giants in early 2000 (Chahine & Tohmé, 2009; Elsayed, 2007; Iyengar & Zampelli, 2009; Michael & Anurag, 2007; Peng, Zhang, & Li, 2007; Tuggle, Sirmon, Reutzel, & Bierman, 2010). It is worth noting that among ten organizations that were confronted with corporate scandals in early 2000, eight of them had the CEO duality (Albrecht, Albrecht, & Albrecht, 2004). Although the impact of the CEO duality or the non-duality structure of the organization, on the firm performance has been widely researched the outcomes are controversial (Boyd, 1995; Finkelstein & D'Aveni, 1994). For instance there is a theory, the agency theory that supports the separation of the CEO-chairman positions. This theory advocates that the corporate performance would be better since the board has an unbiased authority to oversee the CEO's functions (Gillan, 2006; Harris & Helfat, 1998; Shleifer & Vishny, 1997). On the other hand there is the stewardship theory which contends the opposite.

The aim of this paper is to re-examine this important issue in corporate finance, focused on the shipping sector, by using recent data. The innovation of our report is the sector that we choose to examine, the shipping sector. Heretofore, no study has dealt with CEO duality in this industrial sector. The reason we select this sector to investigate the impact of the CEO duality in the firm performance, is that there is no previous report related to this topic and specifically for this sector. Furthermore the shipping industry is distinguished from others because it can be affected to a great extent from others sectors. Also it can be and characterized by a continuous, dynamic and differentiated environment.

Specifically the dissertation consists of five sections. The next section presents the literature review of others reports and papers related to the issue of CEO duality and to what extent it affects firm performance. In the following section we present the theoretical issues of corporate governance, board structure, duties and

responsibilities of chairman and of chief executive officer and CEO duality in more detail. The third section contains information about the research and the methodology which we used in order to compute the outcomes. The fourth section contains the analysis of the results and explanations about the outcomes. The fifth and final section contains a summary and conclusion of our findings.

Assumptions and Limitations

The research evidence is based on companies in the shipping industry during fiscal year 2010 and on four significant financial measures: return on equity (ROE), return on assets (ROA), return on invested capital (ROIC) and earnings before interest, taxes, depreciation and amortization (EBITDA).

The sample data of this study are limited for several reasons. As the independent variable, only 105 shipping companies have been used. We choose the shipping companies that are listed in the yahoo.finance in the shipping sector. From the whole list of companies we use only those for which we found data. Therefore our sample size is small enough comparing to the entire number of shipping companies.

One other limitation of our study is that the results cannot be generalized for all the companies since this research only based on companies concerning the shipping sector.

As far as the dependent variable concerns, stock prices and price-earnings ratios are not used as a measure of performance because stock prices can be affected by many external factors, irrelevant to management and board actions. Furthermore in this study we concentrate on the examination of data only for the financial year 2010. Only this fiscal year was chosen because company management statuses can change throughout the years and for that reason a set of data for more than one year would reduce the sample to those firms that have had a stable CEO-Chairman status during the years. Finally it should be the same years for all the companies. That would lead to a very small set of data that would not provide any kind of significant evidence.

LITERATURE REVIEW

A great part of literature has dealt with board characteristics such as size, composition, and ownership structure and how they are related to the efficiency of the management of the company. They , also tried to investigate to what extent the decisions of the board of directors affect the firm value and performance. The majority of the literature has reached to the following result: smaller boards (Jensen 1993; Yermach 1996), which have a large proportion of independence directors (Weibach & Machael, 1988; Byrd and Hickman 1992, and Brickley, Coles and Terry 1994) and a higher non-CEO ownership structure (Brickley, Lease and Smith 1988, 1994; Agrawal and Mandelker 1990) are more capable in reducing agency costs and increasing firm value.

Furthermore Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990), found that the relationship between CEO ownership and firm performance is non – linear. For instance firm value increases when CEO ownership is at low levels (the alignment range), and respectively decreases when CEO ownership is at high levels of ownership (entrenchment range).

There are a great number of previous studies related to the relationship between the board and firm performance (Bhagat and Black, 1999; Johnson, Daily, & Ellstrand, 1996; Nicholson and Kiel, 2007; Zahra and Pearce, 1989). On the one hand researchers derived with little evidence of a systematic relationship between the characteristics of the board and firm performance (Weir & Laing, 1999). On the other hand studies indicated that there was a positive relationship (Bhagat and Black, 2000), whereas Eisenberg, Sundgren, & Wells, (1998) reported a negative one. It is remarkable the fact that while the role of the chief executive officer continues to receive great scrutiny there is limited research concerning the role of the chairman (Roberts, 2002).

As it is being mentioned above the previous theoretical studies provide no clear picture as to whether firms with split titles of CEO and chairman of the board outperform firms with combined titles.

The results of all these studies can be classified in three categories. The first category of results included those who support that the separation of the two positions, the CEO and the chairman of the board, will improve firm performance. For instance Fama and Jensen (1983) and Jensen (1993) argue that CEO duality may prevent board's ability to monitor efficient the firm and this lead to augment the agency costs. Consequently the separation of roles for these two positions will improve firm performance. Daily and Dalton (1992) argue also that firms with splitting titles of CEO and Chairman of the board perform outperform the firms with CEO duality. In the same direction are the outcomes from Pi and Timme (1993), Baliga, Moyer and Rao (1996), who document better performance for firms with separate positions for CEO and Chairman of the board. Mallette and Fowler (1992) reported that when in the firm the roles of CEO and Chairman of the board are combined, is more likely arising conflicts of interest. As authors mentioned when the CEO is at the same time the chairman of the board, he is able to influence both the board of directors and the nomination of directors of the board. In their research they concluded that CEO duality can challenge the board's ability to monitor executives.² Another research relative to the topic is the report that has conducted by Shivdasani and Yermack (1999), and points out that when the CEO is participated in the nomination process of directors, firms are less possible to appoint aggressive monitors and more likely to appoint gray directors with a conflict of interest.³ In a recent survey done by Spencer Stuart (2003) all of the CEO who are interviewed, claimed that a good relationship between the chief executive officer and the chairman of the board of the organization, is essential for the well functioning of the board. Drawing on agency theory, the opponents (e.g. Levy, 1981; Dayton, 1984) suggest that CEO duality diminishes the monitoring role of the board of directors over the executive manager, and this in turn may have a negative effect on corporate performance. In other words, as Alchian & Demsetz, (1972) mentioned, "who monitors the monitor?" (p. 782).

² Mallette and Fowler (2002), p 1028.

³ Shivdasani and Yermack (1999), p 1852.

In the second category the authors advocated that CEO duality leads to better leadership strategy and consequently to augment the firm performance. More specifically Stoeberl and Sherony (1985) and Anderson and Anthony (1986) supported that CEO duality provides explicit leadership in strategy formulation and implementation and will therefore lead to better firm performance. They contended that non-duality may create costs due to information sharing, conflicts between CEO and Chairman and inefficiency. Furthermore Brickley, Coles and Jarrell (1996) provide evidence of a performance advantage for firms with CEO duality. In the same direction were the proponents of CEO duality (e.g. Anderson and Anthony, 1986; Donaldson and Davis, 1991; Davis *et al.*, 1997), who asserted that corporate performance can be enhanced, when executive manager has the full authority over his corporation by serving also as the chairman, as less conflict is likely to happen.

At last in the third category are those who supported that there is no significant difference in performance between dual and non-dual CEO firms. (Dahya & McConnell, (2005) in a report showed that in the U.K the firms with non CEO duality are not associated with performance improvement. In contrast Dahya and Travlos (2000) found a positive relation between CEO duality and firm performance. Additionally Daily and Dalton found (1997) that there is no significant difference in performance between dual and non-dual CEO firms. Faleye (2007) found that CEO duality is positively related to organizational complexity, CEO reputation and managerial ownership. His results also suggest that firms do consider the costs and benefits of alternative leadership structure. Other authors such as Brickley, Coles, & Jarrell,(1997) argued that there is no one optimal leadership structure as both duality and separation perspectives have related costs and benefits. Hence, duality will benefit some firms while separation is likely to be advantageous for others.

Thereafter empirical evidence is somewhat inconclusive. While some studies (Donaldson and Davis, 1991; Lin, 2005) supported the positive impact of CEO duality on corporate performance, others (Rechner and Dalton, 1991; Pi and Timme, 1993) found that duality leads to inferior shareholder value. Yet other studies (Berg and Smith, 1978; Chaganti, Mahajan, & Sharma, 1985; Rechner and Dalton, 1989;

Baliga, 1996; Abdullah, 2004) demonstrated that CEO duality and corporate performance are not correlated. To tackle this problem in the literature, some authors use contingency theory to explain the relationship between CEO duality and corporate performance. For instance, Boyd (1995) clarifies that “We propose that both theoretical perspectives are correct – under different circumstances. Thus, duality may be negatively associated with performance in some situations, but it may be positively related in others” (p. 302). In the same way, Brickley (1997) illustrated that the optimal leadership structure varies across firms. Furthermore, Rhoades (2001), in their research derived that independence of the CEO and the chairman of board has a positive impact on corporate performance, but this varies with the context of the study.

In conclusion the extant empirical evidence concerning the kind of relationship that exists between CEO duality and firm performance is indisputably mixed. It can be argued that one possible reason for this diversity of results is that not all these studies examine the firm’s characteristics that determine the potential for conflicts of interest between shareholders, bondholders and managers.

CEO DUALITY AND FIRM PERFORMANCE

This study is dedicated into defining whether the existence of CEO duality has any impact whatsoever on the performance of a shipping company. However before we decide on that, we should firstly see how this aspect of corporate governance is generally handled.

CEO duality indicates those cases in the corporate world where the qualities of the CEO and the chairman of the board of a company are both met on the same person (Boyd, 1995; Filkenstein & D'Aveni, 1994). Though this type of management has been around for many years from the beginning of the creation of companies in the later years due to a series of scandals, more and more it is being criticized and examined. The collapses of corporate giants in the 00's (Elsayed, 2007) showed that there might be some hidden relationship behind the two parts. It is worth noting, that among ten big corporations that were challenged by scandals, only two of them did not have a dual CEO (Albrecht, Albrecht, & Albrecht, 2004).

There are two major ideas that orbit around the CEO duality and its consequences on the performance of a firm. The first is the agency theory that refers to the effect the position of the Chairman and the CEO has on the operations of the company. CEO duality 'signals the absence of separation of decision management and decision control' (Fama & Jensen, 1983). An implicit assumption of the agency model is that executives are inherently opportunistic agents who will capitalize on every chance to maximize personal welfare at the expense of shareholders (Boyd, 1995). The role of the board is to be one step ahead of the CEO, monitoring and criticizing the managers' every move in order to keep a kind of transparency over the company's operations. In the cases where the CEO and the board chairman is the same person then the auditing power, the board is supposed to have, is lost, and the CEO may work undisturbed for his own benefit ignoring the shareholders. In general the theory supports that a board formally controlled by the CEO is likely to lack independence and vigilance, leading to more agency problems and, ultimately, poor firm performance (Pi & Timme, 1993).

On the other hand there is the stewardship theory according to which CEO duality maintains the necessary unity of command at the top of the organization (Donaldson & Davis, 1991). As a result, CEO duality helps prevent any cases of misunderstanding and confusion among the managing heads making it clearer to those who operate the company what each of their jobs is. A well organized machine runs better than a confused one. In that case the CEO, rather than wanting to create welfare for himself, actually prefers to take the high road and do his job flawlessly, thus gratifying the board himself and the shareholders. After all he is a shareholder himself and has something to lose in case of a company meltdown.

Apart from the two there is also the resource dependence theory (Pfeffer & Salancik, 1978) suggests that the board is an instrument that can control external reliance and condense environmental uncertainty. In other words its character is more addressed into composing the corporate boards whose main role is to serve as resource providers to the firm (Dalton, Daily, Ellstrand, & Johnson, 1998); (Rechner & Dalton, 1991).

Due to the big notoriety of the latest scandals that have shook the corporate world such as the Enron case the case of the CEO duality has been under a big debate in the latest years. Whether it is preferable or not and whether it produces, are some of the main questions the financial world finds itself asking. Because of the wide media coverage of cases where the company officers pillaged upon the company's safes, jeopardizing the employees' pension under a blissfully mislead board, attention has been drawn to this case of corporate fraud that has led many commercial giants to bankruptcy from one day to another (Callaghan, 2005).

To tackle this behavior of mal fate, agencies that were in charge of controlling the financial and accounting habits of companies have decided that it is time to step in based on public uproar for help. The entities, some stated by government, some independent, have set up a group of rules that companies are supposed to comply under in order to be legit(U.S. Congress, The Securities and Exchange Commission, the New York Stock Exchange). However the problem does not appear to be tackled. The result of all the mobilization was the passing of the Sarbanes-Oxley bill

that among others imposes law on public companies, attorneys and auditing companies (Callaghan, 2005). Its main idea is that it gives more responsibilities on the corporate board of directors audit committee. It is in charge of hiring and administering the public company auditor, has the role of deciding the fees of the auditors, counsel and advisors and can consult and turn to external counseling for advice. Additionally, the committees' members must be autonomous and must report periodically whether the group contains at least one financial expert, or explain, if otherwise.

Disagreement between the shareholders and the management of corporations is not new in the area. For long the investors have been questioning the methods of the board as to the quality of their actions regarding the company. Issues like the independence of the board of directors remain vital for the equity holders. It is widely believed that a board constituted by more outside members than by inside members is able to ensure the required transparency and gives the impression of better governance (Callaghan, 2005). Nevertheless the above has not been proven since researches on this topic do not concur (Bgahat & Black, 2002); (Klein, 2002); (Luoma & Goodstein, 1999). One of the reasons that there does not seem to be a conclusive answer to this topic is that it is difficult, if not impossible, to find a measure of transparency. What identifies someone as an inside board member cannot be clearly stated.

However there are some general patterns that are followed in order to identify a board director as an inside or outside board member. There is also the case of related directors. An inside director is usually a person that is highly involved with the functioning activities of the company. They have gained their place on the board mainly because of their capability of providing information of any kind that affects the company's operations. Chief Executive Officer, Chief Financial Officer and Chief Operating Officer are usually among those. Outside directors are considered those who are elected as members of the boards in order to ensure the interests of the rest of the shareholders and are not linked to the company by any other way. Their role is to guarantee the independence of the board and the efficacy of the managements operations. Finally related, affiliated or grey director are considered

those who are not completely independent to the company due to some form of association with it.

Arguments have been on either side of CEO duality, both con and pro. Here we present the ones that are most used in the debate about CEO duality and firm performance. The dual character of the management is thought to affect the profitability of a firm but the opinions vary as to whether it is better or worse than having a separate CEO and Chairman.

Concerning the relationship that CEO duality may have with the firm performance there have been many different studies but no significant results seem to come out of them. As it will be proven later by providing information over several studies on the same subject, as the data change and differentiate, so do the results.

According to a research (Coles, McWilliams, & Sen, 2002) numerous mechanisms that are related to the performance of a firm have been investigated using as variables the stock block holders effects, industry performance and firm size. From a sample of 144 U.S. companies spread over 3 industries, using a set of compensating data from 1974 to 1988 combined with information on the performance from 1984 to 1994. They found that a dual CEO status has a positive impact on the difference between the firm's after tax operating profit for a specific year and the product of WACC times the investment at the end of the previous year.

On another research, realised by Sridharan & Marsinko in 1997, the effect of a dual status was examined on the financial performance of the Paper and Forest Products Industry from 1988 until 1992 (Sridharan & Marsinko, 1997). Out of a sample of 18 firms, where the 7 functioned under a separate CEO-Chair status while the rest were under CEO duality, the results indicated that the return on equity of the latter group is higher than the first, a 12.06% against 5.69, at a statistically significant level of 0.06. The ratio of return on assets also moves to that direction with 4.8% opposite to 4.0% but unlike before the difference is not statistically significant. On the same spirit, the profit margin for firms with CEO duality is higher, 16.3%, than the profit margin in non duality firms, 13.45%, at a statistically significant 0.07. Also, the average annual growth in sales was found to be higher for firms under a dual status,

a 5.2% against a 0.79% but statistically insignificant. Duality firms realise a higher book value of \$5,710 mln compared to \$1,150 mln, a difference that is also statistically significant at 0.0001. leverage ratios indicate a higher and statistically significant debt of duality firms compared to a lower debt for non duality firms, and the annual average percentage change of debt was also moving at the same direction at statistically significant levels of 0.0064.

A study of Fortune 500 companies between 1980 and 1991 has researched the effect on their operating performance of a change in the duality status up until two years since it occurred. The ratios used in this case are also return on equity, return on assets, operating cash flow to sales and operating cash flow to assets. (Baliga, Moyer, & Rao). There is no evidence found to support any major effect from the change of management status. On the same track, there is no significant evidence that a status change has an impact on the performance of the company as measured by the ratios mentioned before

Another analysis realised on a longitudinal level on a sample of 141 Fortune 500 companies between 1978 and 1983 used return on investment, return on equity and profit margin in order to specify how the organisational performance is affected (Rechner & Dalton, 1991). Variance analysis shows significant differences between the variables that indicate the performance of the company expressed as a function of the status and the results give a better result for the case of no-CEO duality.

For a group of researchers on the topic (Rhoades, Rechner, & Sunadarmutry, 2001), 22 samples of 5,751 companies was used in order to reach their conclusion that show that under the absence of CEO duality firms operate more efficiently.⁴

⁴ Daily and Dalton (1993) evaluated the performance for the smaller corporation, which, for this study, is defined as employing fewer than 500 and generating sales not exceeding \$20 million annually. The sample is 186 companies. The research indicates a significant correlation between CEO duality and return on assets (Callaghan, 2005)

Corporate Governance

In general terms corporate governance is often used to describe the way a company is managed, monitored and held accountable. Until now there is no widely accepted definition of corporate governance because it is a relatively new term and its concept is not well defined, due to the fact that it covers various distinct economic phenomena. However the corporate governance has been defined by business literature and authoritative guides in different ways and from different perspectives. From a regulatory perspective it is described as “the system of laws, rules, and factors that control operations at a company.” Another definition that is put forward by corporate governance participants is that “corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment.” Additionally corporate governance can be viewed as the relationship between the company and its capital providers, focusing on the broader aspects of stakeholders.

In general terms there is no globally accepted corporate governance structure. Different structures of corporate governance reflect the nature of cultural, social, legal, regulatory, business and economic systems.

Corporate governance, for Rezaee, 2009 is defined as:

The process affected by a set of legislative, regulatory, legal, market mechanisms, listing standards, best practices and efforts of all corporate governance participants including the company's directors, officers, auditors, legal counsel, and financial advisors, which creates a system of check and balances with the goal of creating and enhancing enduring and sustainable shareholder value, while protecting the interests of other shareholders.

Corporate governance should be viewed as a dynamic approach of financial, social, environmental, and economic concerns of all shareholders. No matter what aspects of corporate governance is accepted, the corporate governance structure should be based generally on the following conditions:

- The main purpose of corporate governance is to create and reinforce constant and sustainable shareholder value protecting at the same time the interest of other shareholders.
- The board of directors due to the quality of being representatives of the investors has direct authority to sway business affairs of the company and is ultimately accountable to investors for the company's strategic performance, achievement of goals, and prevention of surprises.
- The board of directors confides the authority of managing the company to the top management team, which consists of senior executives CEO, CFO, and holds senior executives accountable for their decisions, actions and performance.
- The chairperson or the chairman, as it is used to be mentioned, of the board of directors is mainly responsible for coordinating and organizing the board's activities and for these actions is accountable to the entire board.
- On the other hand the CEO is dealing with the management of the company and is accountable to the board for the assigned managerial functions and decisions.

In conclusion the role of corporate governance is to align the interests of management and of shareholders, to reduce the agency costs and to create long term shareholder value by focusing on the decision control responsibilities of the board of directors.

Corporate governance and board structure

Around the world there are large differences in business practices and corporate governance and the most important international difference is in the structure of the board of directors. On the one hand there are countries that apply the two-tier board system. This system constitutes from one executive officer who is delegated with the management of the firm and one other executive officer who is responsible for monitoring the board. On the other hand there are countries that have a one-tier system with just one board containing executives as well as non-executives. In

European countries the organizations apply more the two-tier system, while most Anglo-Saxon organizations operate the one-tier system. Related to that issue of board structure there is the difference of separation or not of the functions of the chief executive officer and the chairman. In the two-tier board system the roles of CEO and the boards of directors are confined in most cases to separate persons. In the one-tier system, some countries have the same person as CEO and chairman and other countries characterized by a dual leadership structure which separates the two administrative positions. Before mentioning the outcomes of these different board structures and how they are related to the firm performance, it is relevant to first go into the different roles of the board, the chairman and the CEO.

What does a chairman have to do

During the past decades the debate on corporate governance has focused on the role of board of directors. In every company the board's function is to set the company's aims and objectives and to ensure that they are realized. It is true that boards are the link between the corporations and the outside world.

The person who is responsible for ensuring that board provides the appropriate leadership is the chairman. The chairman who is the highest officer of an organized group is typically elected or appointed by the members of the group. Among public corporations, there are two types of chairman, executive and non-executive. The executive chairman has the role of executive of the company which is the chief executive officer and it can subsist as a separate position. The non-executive chairman owns no executive position with the company and is mostly a foreign.

The role of the chairman will vary through different industries and boards for which they are responsible. Also it depends on whether the chairman is and the chief executive officer of the company and whether chairmen spend most or only a part of their time in the company.

There are two aspects of the chairman's role. The one is that chairmen are the leaders of their board teams and their role is defined in accordance with the roles of the other members of the team. One important task of the chairman is to verify that

the board of directors operates efficiently and to provide whatever form of leadership is needed in order to bring out the best to the board teams. The other aspect of the chairman property is to adjust their role due to the fact that the team members will change through time. Thus the role of the chairman does not remain fixed from appointment to retirement but it should change as chairmen gather experience.

Additionally a chairman of a company is responsible for the effectiveness of the board. Due to the existence of persons with different characteristics and attitudes in the board, the chairman should have the ability to control and coordinate this team in an efficient way. An important task of a chairman is making appropriate changes in the composition of the board. For instance, when a member of the board gets to the end the chairman has to decide the issue of reappointment, considering the board's view.

One of the most important tasks of a chairman is to chair their boards. The job of a chairman is to encourage board members to give their best in a cooperative case. Chairmen are delegated with the responsibilities for the organization of the meetings. They should try to be productive in these meetings, and their personal contribution should be decisive. The aim of the chairman is to control the discussion of the board of directors in order to keep it to the point, so that the meetings come to the best conclusion. Chairmen are responsible for ensuring that board meetings waged efficiently and that their time will not be wasted. Furthermore an important ability of a chairman is to hold the board team together, encouraging diversity of opinion.

Duties and responsibilities of a chairman of the board can vary from situation to situation and from company to company. For example a chairman of a non-profit foundation may have different duties than a chairman of a Fortune 500 company. A chairman of the board may not be a full-time employee of the company or agency, but often is, especially if it is a large organization.

In addition to the previous duties mentioned, a chairman of the board also provides a number of other essential functions. Those include running meetings, coordinating

subcommittees, aiding board development, providing financial and legal oversight, assessing performance and perhaps also holding a certain level of administrative duties.

Adrian Cadbury referred to chairman and characterized him as an important judge whose duty is listening to the point of view expressed, keeping the discussion relevant to the topic and sum up the board's conclusion.

Chairmen along with basic intervention and problem solving, they have and a representational role. They have to represent the company properly in the outside world. The chairman gives speeches or presides over conferences, when interacting with the public. Also it is likely to involve being prepared to appear on television and to give interviews on the radio or on the press, as the occasion commands. The organization has a public face, allowing the people to connect the actions of the group with a single individual.

What does a Chief Executive Officer have to do

The Chief Executive Officer characterized by Zabihollah Rezaee (2009) as the heart of the managerial function of the corporate governance and is responsible for taking organization decisions. This accrued from the fact that all other senior executives and managerial staff apply to the CEO for direction and guidance. The basic duty of the CEO is to establish the appropriate tone at the top by promoting effective functioning, ethical conduct, and professional behavior through the company. He or she is the person who establishes goals and plans that affect the entire organization.

The CEO is the person who is accountable about the company's either success, growth and prosperity or failure and even bankruptcy. This is attributed to the fact that CEO deals with a variety of different topics in a company such as operating matters, marketing, strategy, financing, creation of company culture, human resources, hiring, firing, compliance with safety regulations and even sales. Thereafter personal attributes, ethical values, and professional characteristics of the CEO should be in accordance with the company's boards of directors and shareholders values, visions, and strategic plans.

One indispensable characteristic that the CEO should have is loyalty, which requires officers to act solely for the benefit of the company and its shareholders. The duty of loyalty obligates executives to act only according to the best interest of the company and its shareholders, not to compete with the company and use confidential information.

The CEO has three fundamental roles:

- A CEO is a leader, who establishes and directs the vision and mission of the team. In this commission, the CEO is the source of visionary strength of the company and strives to accomplish its mission.
- A CEO has the role of the project manager and is responsible for directing the operational activities of the company through scheduling the utilization of the company's resources, including people and capital equipment. Additionally the CEO is qualified for establishing and implementing the company's operating plan.
- A CEO can be characterized as a coach too. He or she chooses the appropriate people for the management team and improves their performance through continued counseling. As a coach, the CEO works with people in order to help them become greater contributors and improve their efficiency and effectiveness.

A CEO performs a significant number of duties, contributing to the successful functioning of any management team. The primary objective of the CEO is to implement the strategy in order to achieve the company's vision. For the attainment of the mission of the company the CEO works with team members, trying to develop a strategy and plan.

The CEO is able to establish priorities for projects and tasks and take decisions related to the changes that required to be made. She/he is the person who assures that the right people are placed in the right job assignments, and that people get further training to do their jobs.

The CEO has an important duty to delegate responsibility and accountability, giving by this way to people a clear role and a set of responsibilities, empowering them to act, and holding them accountable for results. This is the most important task of management.

Additionally the CEO has the important role of communicator, taking care of people's needs. The executive officer ensures that people get what they need in order to do their jobs, providing them with information that is necessary in order to understand the context of their jobs. People generally want to be informed about the company's vision and strategy and about the markets, the customers and the competitors. Consequently one of the CEO's responsibilities is to make sure that people know what is going on and how they are affected.

The CEO represents the company and its policies, builds relationships, establishes and supports working relationship principles by creating an environment where people can count on each other. It is important to know what one can expect from another. The CEO's job is to help people understand how the team operates efficiently and to provide them information about the role of each member on the team.

Finally the CEO has the capacity of being a mentor because he or she advises people towards their career goals, helping them to evolve their career. Despite the fact that people are responsible for their own careers, the CEO can be a valued advisor in career planning.

What is CEO duality

CEO duality implies that the company's CEO holds both the position of chief executive and the chair of the board of directors. There have been expressed various opinions concerning the advantages and the disadvantages of the CEO duality. The separation of these offices has remained a challenge for many public companies even in the post-SOX era. Those who are against to the combination of the two positions support that a single person has too much power and is difficult to take the appropriate actions and decisions in any case. Investors in general are in favor of the separation of the positions because by in this way the board's independence is

strengthened and the potential conflicts of interest decreased, particularly when the company is realized that is managed poorly.

Overall as it is supported the Chairman is the leader. In general the Board of Directors is delegated to create the primary direction of the organization, the Chairman work with the CEO to address this direction, and the CEO apply the appropriate actions in the company in order to achieve this direction.

Supporters and opponents of CEO duality

The supporters of either CEO duality or separate roles are classified in two categories. The internal shareholders such as firm management advocate the positive impact of duality, whether the external shareholders such as firm shareholders uphold the separate roles of chairman and CEO, as a way of increasing the effectiveness of board monitoring (Daily & Dalton, 1997a).

There are a great number of arguments towards the separation of role of the CEO and the Chairman of the board. The proponents of CEO-Chair separation claim that duality restricts board independence and diminish the ability that the board can carry out its governance role. In addition they sustain that a board of directors neither is able to discipline effectively, nor is capable of exercising control over a CEO who is also the chairman. Under the CEO duality, the board control of the management decision function is lower (Conyon & Peck, 1998). The board chair should be a monitor, an advisor, and a coach of a management's company. It is easily understandable that two individuals put towards different opinion, strategies and perspectives and also could supplement one another. As it is observed a separate chairman brings about CEO prevalence. As it is mentioned before agency theory maintains the separation of these two roles.

On the other hand those who support the duality argue that this combination of responsibilities provides powerful leadership, unity of command, focus, stability, and clarified decisions, whereas a company with a separate CEO and Chairman is more likely to be less effective. Centralization of authority is considered an efficient means to superior firm performance (Daily & Dalton, 1997). Furthermore duality

can reduce potential rivalry or dispute between the CEO and the Chairman of the board, depleting by this way potentials detriments to the operations of the firm. Duality is a means of an organization to establish independence and autonomy between the board and the firm management. Nevertheless, non-executive chairmen might be independent only in name because they are the former CEOs and are related to current management or have substantial equity in the firm (Daily & Dalton, 1997).

METHODOLOGY

The Research Problem

The main reason of deciding to go ahead with the completion of the specific dissertation is mainly due to the fact that there is little evidence about the corporate governance part in the shipping industry. The literature concerning the issues of CEO duality is just starting to develop and throughout the whole research realized for the completion of this dissertation no specific report has been made for the shipping industry which is both very important for any economies it supports, and highly different than the rest of the sectors. Consequently managers of the shipping firms have not yet had any proven information as to how they should approach the issue of CEO duality-or not-in order to do the best for their company. This dissertation is trying to serve as a reference to those who are wandering on the matter using some primitive performance ratios that have been used on the already reviewed literature.

The Research Question

It is defined as before. The reason that this research is realized is in order to find out whether, or not, there is any kind of relationship between the ways a company is structured on the corporate governance field. Most specifically the field of CEO duality is examined if it plays any role on the performance of the company to be questioned. This research question applies specifically on the shipping industry firms as it is known that shipping is a sector that differs from the others. So the decision was taken in order to investigate the sector by itself and have specific results that can apply to it.

The Research Hypothesis

This dissertation consists of the following four hypotheses. The first null hypothesis is that CEO duality and non-CEO duality result in the same return on equity of a

firm. The alternative hypothesis is that return on equity is different between CEO duality firms and no-CEO duality firms.

The second null hypothesis is that CEO duality and non-CEO duality result in the same return on assets of a firm. The alternative hypothesis is that return on assets is different between CEO duality firms and no-CEO duality firms.

The third null hypothesis is that CEO duality and non-CEO duality result in the same return on invested capital of a firm. The alternative hypothesis is that return on invested capital is different between CEO duality firms and no-CEO duality firms.

The final null hypothesis is that CEO duality and non-CEO duality result in the same earnings before interest taxes depreciation and amortization of a firm. The alternative hypothesis is that earnings before interest taxes depreciation and amortization is different between CEO duality firms and no-CEO duality firms.

If the research shows that shipping firms with CEO duality present in their governance have better and higher return on equity, assets, invested capital and leverage than shipping companies with CEO unity then that will be proven scientific evidence that no matter what the rest of the literature may have shown, shipping firms could be benefited by having one person in the role of CEO and Chairman for the company. If the research evidence proves that companies with two different people in the two positions have a better performance than the ones with CEO duality, then it would be beneficial for the shipping sector its companies to follow the unity model.

Finally, should the research result in no significant difference between the two types of governance for the shipping firm's performance then obviously there is no evidence that the companies should follow the one or the other path.

This research is realized based on the four aforementioned ratios for year 2010 and only refers to shipping companies. One should not be generalizing the results on other sectors.

A regression is also estimated for each of the four variables in order to identify whether there is any relationship between CEO-Chairman status and the performance and whether it affects it.

The Research Variables

The independent variable is the status of each company's management CEO duality or CEO unity for the last year. Duality is stated by the number one and unity by the number zero. The dependent variables are return on equity, return on assets, return on invested capital and earnings before interest taxes depreciation and amortization for the fiscal year ending 2010.

The Research Data Sources

The data were collected from three sources that came to complete one another. Yahoo.finance was used in order to retrieve the information of the shipping companies that exist in the markets, through the company index of the shipping services industry.

Thomson One provided the majority of information on CEO-Chair status and the data for the dependent variables. Even though this database proved very helpful unfortunately it did not provide information for all the shipping industries.

Bloomberg database was used in order to find the remaining data that could not be retrieved through Thomson One. In many cases half of the data was retrieved from one database and the remaining was taken from the other. However there was multiple cross referencing in order to ensure that both databases had similar data.

Finally the sample consists of 105 companies; full set of data was available only for those. From those, 46 had CEO duality and the rest 59 did not operate under CEO duality.

The research methodology includes statistical analysis of the four dependent variables for the fiscal year 2010- return on equity, return on assets, return on invested capital and earnings before interest and taxes are being examined relatively

to the CEO-Chairman status of the specific period. The analyses used are equality of descriptive statistics, equality of means, equality of variances and equality of medians and finally we use simple equation estimation in order to see whether there is any kind of relationship between the variables and the statuses of each company.

The descriptive statistics give us an idea of the distribution of our data, either normal or not. It is conducted both on each group separately as well as on the total sample. The equality of means, tests the two samples for any differences between their means. The two samples are the companies who during the end of the fiscal year 2010 operated under CEO duality and the companies who, for the same period did not have CEO duality. The test shows any significant differences between the means of the two samples. It assumes that the samples are normally distributed, its standard deviation is not known, the samples are independent and their variances are equal. The data distribution is being measured by statistical tests like kurtosis, skewness, Lilliefors, Watson and Anderson Darling tests. The equality of variance is being tested through the Levene test. A 0.05 level of significance is assumed for all the tests. A synopsis of the research methodology is presented below.

Figure 1: Research methodology synopsis

Research question: Is there a relationship between CEO – Chairman status and the performance of the shipping sector?
Ho1: Dual and separate CEO-Chairman status result in the same annual return on equity Ha1: Dual and separate CEO-Chairman status result in different annual return on equity Ho2: Dual and separate CEO-Chairman status result in the same annual return on assets Ha2: Dual and separate CEO-Chairman status result in different annual return on assets Ho3: Dual and separate CEO-Chairman status result in the same annual return on invested capital Ha3: Dual and separate CEO-Chairman status result in different annual return on equity Ho4: Dual and separate CEO-Chairman status result in the same annual earnings before interest taxes depreciation and amortization Ha4: Dual and separate CEO-Chairman status result in different annual earnings before interest taxes depreciation and amortization
<i>Dependent variable: Return on equity-Return on assets-Return on invested capital-Earnings before interest, taxes, depreciation and amortization</i>
<i>Independent variable: The CEO –Chairman status for year 2010</i>

Collection and analysis of data

ROE

The return on equity (ROE) reflects the amount of net income returned as a percentage of shareholders equity. This ratio is widely used in order to measure the corporation's profitability and efficiency. Additionally reveals at what extent the money that shareholders have invested in the company generate profits and if the policy of the corporation related to investments funds lead to a growth of earnings. Return on equity is a financial ratio and is a useful tool for comparing the degree of profitability of companies in the same industry. The ROE that get prices between 15% and 20% is considered to be a desirable ratio.

The return on equity is expressed as a percentage and calculated by the formula:

Return on Equity = Net Income after tax/Shareholder's Equity

The net income is computed before the company pays dividends to common stock holders but after pays dividends to preferred stock. Shareholder's equity does not include preferred shares. The ROE is also known as "return on net worth" (RONW). The investors are able to use many variations of the above formula because this ratio has a great importance.

For example there is a number of investors who want to see the return on common equity. In this case the formula will change by subtracting preferred dividends from net income and subtracting preferred equity from shareholders' equity. The formula now is :

Return on common equity (ROCE) = net income - preferred dividends / common equity.

It is important to mention that return on equity is presumably irrelevant if the earnings are not reinvested, and this happens because the benefit can come as a dividend on common shares or as a combination of dividends and reinvestment in the company.

ROA

The return on assets (ROA) can be characterized as an indicator of how profitable a company is relative to its total assets. It is a percentage which shows the ability of a firm's assets in generating revenue. In general ROA gives an indication of what extent is the management of the company efficient. Sometimes this is referred to as "return on investment". The formula for computing the return on assets is the following:

$$\text{ROA} = \text{NET INCOME} / \text{TOTAL ASSETS}$$

This number can inform an investor or an analyst about what the corporation can do with the assets that it possesses. The assets of the company are comprised of both debt and equity and in the above formula in order to get total assets, we calculate the average of the beginning and ending asset values for the same time period.

Both of these types of financing (debt and equity) are used to fund the operations of the company. Higher percentage of ROA is desirable because the company is earning more money comparing to what pay out in investments.

Return on assets is a useful number for comparing competing companies in the same industry and this percentage can vary widely across different industries. This is why when using ROA as a comparative measure, it is best to compare it against a company's previous ROA numbers or against the ROA of a similar company.

Additionally return on assets is a measure of the capital intensity of the company, which will depend mostly on the industry. Thereafter companies that require large initial investments will generally have a lower ratio of return on assets.

ROIC

The Return on Invested Capital (ROIC) refers to the extra return that a company produces on every additional unit of capital that is invested in it. It is used to estimate the ability of the company to assign the capital that is given to it on investments that will have a positive end result. It is commonly used in comparison with the company's WACC; a higher ROI indicates that the capital has been

invested correctly and the company has a profit out of it. When the opposite occurs, the company is thought to be destroying value. It is always calculated as a percentage. Specifically it is produced by dividing the difference of Net –Income and Dividends with the Total Capital:

$$= \frac{\text{Net Income} - \text{Dividends}}{\text{Total Capital}}$$

ROIC is an indicator that provides us with information about how the company has operated in the past. When its levels are high it is an indicator of a well operating company management that produces profits for the company. However due to its financial synthesis it is a ratio that can be misleading especially when: subjected to management manipulation, alterations in accounting rules, inflation and other factors that may affect a company's financial statement.

EBITDA

Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA) are a financial ratio that is widely used as an indicator of the company's performance. Though not really a ratio, it is handled as such in many cases by financial analysts, since it gives a clearer image of the company's conditions. It gives us the net income of the company's operations that is calculated by extracting the expenses made for reasons other than taxing, interest, depreciation and amortization, from the original revenues of the company's operations. More specifically, EBITDA:

$$= \text{Revenue} - \text{Expences}(\text{eliminating interest, taxes, depreciation and amortization})$$

It can be used in order to mainly evaluate the effectiveness of a company's operation compared to another. It is more preferred because in its form, it abolishes the results of accounting and financing decisions.

The data used to perform the analyses are presented in Table 30 in Appendix A

In this research we consider the independent variable to be the status of the company's CEO during the end of the fiscal year of 2010. The data were obtained by yahoo.finance, Thomson One and Bloomberg.

Table 1: Summary of CEO-Chairman status of the shipping firms listed on the shipping sector index of yahoo.finance on the end of 2010.

CEO –Chairman status	Firms quantity	Percentage in total
Dual	46	43.8%
Separate	59	56.2%
Total	105	100%

As it can be seen from the table, 46 shipping companies out of the total 105 that operate in the markets have a CEO that also serves as the Chairman of the company. The remaining 59 have separated positions.

Analysis of the dependent variable

The return on equity, return on assets, return on invested capital and earnings before interest and taxes data are collected by the Thomson One and Bloomberg database. The statistical analysis of all the data has been performed on E-Views.

DATA ANALYSIS

Hypothesis 1: Effects of Duality on return on equity.

Descriptive statistics, measures of normality, equalities and regression

Table 2 summarizes the stats of variable number one, return on equity for 105 shipping firms separated in two groups and altogether. The mean return on equity for all the companies on 2010 is -1.39 with a standard deviation of 57.83%. The highest mean of return on equity was scored by the 46 companies of dual structure at a standard deviation of 23.06. The separate status companies have an opposite -7.40 to report for return on equity.

Skewness and kurtosis show the probability distribution the data have around their mean. Here we have the mean of returns on equity for all firms. Normally distributed data have a skewness of zero and a kurtosis of three.

Skewness is a mean of measuring the asymmetry of the tails on a distribution histogram of the data we have. A skewness that is higher than zero indicates that the right tail is less fat than the left showing that the majority of our observations are concentrated in the left tail. A negative skewness shows that the majority of our observations are sitting in the right tail of our probability distribution leaving the left tail thinner. As mentioned before, when our data are evenly distributed they are called normally distributed and come with a skewness of zero. For our return on equity we see that the 'dual' group has a negative skewness, as does the 'separate' group which leads to distributions with fat right tails. The data are not normally distributed and have a thicker tail to the right of the group's mean.

Kurtosis indicates the volatility of volatility and measures how the probability distribution peaks. For a normal distribution the kurtosis takes a number of three. Any number higher than this indicates that the majority of the variability of our data comes from the extreme deviations that are rarer compared to frequent more normal deviations. It is presented as a higher peaked distribution with fatter tails. A kurtosis that is lower than three is presented with a more even and round peak and slim tails.

The kurtosis of our data are in both cases higher than three even though for the ‘separate’ group it is much more volatile. In the ‘dual’ group kurtosis is 8.36 while for the other group is 33.55. So both their distributions have sharp peaks with longer tails.

Table 2: Descriptive statistics for the dependent variable, ROE

Statistical measures	Dual	Separate	Both groups
N	46	59	105
Mean	6.38837	-7.404575	-1.396795
Standard Deviation	23.06285	74.16709	57.83265
Skewness	-1.42516	-5.353724	-6.571835
Kurtosis	8.361691	33.55685	52.99781

In order to further analyze the distribution of our data three more normality tests are used, the Lilliefors, the Watson and the Anderson-Darling. Histograms and quantile quantile plots are also used to identify the distribution of the data. Additionally the Levene and the F-test are used to identify any equality of variances for our variables. The data distribution analysis is being made in order to decide what tests are going to be used for further analysis.

The Lilliefors Watson and Anderson Darling tests are used to test the data sets for normality. These tests are based on the comparison between the empirical distribution and the specified theoretical distribution function. The null hypothesis is that there is no difference of return on equity between the groups. The alternative is that there is a difference. Table 3 shows the results of the tests. All three have a probability that is lower than $\alpha=0.05$, so the null hypothesis is rejected by all three tests in favor of the alternative hypothesis. Therefore, the majority of the returns on equity for 2010 are distributed unevenly around the mean of the data, and this occurs in both cases.

Table 3: Normality tests for ROE

CEO-Chair Status	Lilliefors		Watson		Anderson-Darling	
	Statistic	Probability	Statistic	Probability	Statistic	Probability*
Dual	0.192423	0.0002	0.367163	0.0000	2.216571	0.0000
Separate	0.375159	0.0000	2.414796	0.0000	12.88684	0.0000

* $p < \alpha = 0.05$

In order to test if the error variances of return on equity are more or less at the same level the Levene and Siegel-Tukey tests are used. The null hypothesis is that the variances of the two groups are equal. The alternative is that they are not equal. Both tests indicate that the return on equity for the two groups is not the same. The Levene test is taking the number 2.47 at a 0.1187 level of significance (Table 4), hence the null hypothesis is not rejected and the variances of the returns on equity can be equal between the two groups. On the same path, the Siegel-Tukey test also does not reject the null hypothesis at a 0.6167 level of significance and equals to 0.50. Therefore the variances between the two groups are equal.

Table 4: Tests of equality of Variances of ROE

Test	df	Statistic	Probability*
Siegel-Tukey		0.500535	0.6167
Levene	(1, 103)	2.475937	0.1187

* $p < \alpha = 0.05$

Returns on equity figures include histograms, and quantile-quantile plots and box plots, are presented as Figure 4 through Figure 6 in Appendix B. These are used in order to provide a visual analysis of the data distribution. Similar to the results of the normality tests the histograms show no normality in the distribution and are skewed to the left so more annual returns on equity are above the mean annual return on equity. The quantile –quantile plot also show non normality in the data since the quantiles are in a completely different place than the normal distribution line. The box plots show that the variance that is indicated by the heights of the boxes which are not very far apart from each other. The boxes can be assumed to have the same

height. That leads us to a stronger conclusion that the variances of the two groups are equal.

Moving on we use a test of equality of medians to investigate whether there is any similarity between the two groups. The median test show whether there are irregular sample data around the median return on equity.

Table 5 below, provides the median distributions.

Table 5: Median test frequencies ROE

Relative to median	CEO – Chair status	
	Dual	Separate
>Median	23	29
≤Median	23	30

E-Views produce its own equality of means results using the Kruscal-Wallis test. The results are presented below. Equality of means is tested under the null hypothesis that the means are the same in the two groups. The alternative hypothesis is that they are not. According to the results of the test, annual return on equity, at Chi-square of 0.94390 is not statistically significant since the probability is higher than $\alpha=0.05$. Therefore we cannot reject the null hypothesis. The medians of the two groups are similar to each other. A conclusion that is also indicated by watching at the boxplot (Figure 6), where the lines are appearing to be at the same height, an indication that the means are no different from each other.

Table 6: Kruscal Wallis test of medians between series⁵

Measure	N	Median	Chi-Square ⁶	df	Probability*
Value	59	7.129900	0.94390	1	0.7587

* $p < \alpha = 0.05$

⁵ Grouping variable is the CEO-Chairman status

⁶ Kruscal Wallis test(non parametric)

Equality of means is tested using the Welch and the Anova test. The null hypothesis is that the means of the two groups are equal. The alternative hypothesis is that the two means differ from each other. The Welch test shows that return on equity, with a statistic of 1.79, is not statistically significant having a probability level of 0.1846. On the same path the Anova test, at a statistic of 1.45, indicates no statistically significant basis to reject the null hypothesis. Therefore the null is not rejected and the means of the two groups can be considered the same. Table 7 below shows the results of the equality of means test on the return on equity.

Table 7: Test of equality of means for ROE

Test	df	Statistic	Probability*
Welch F-test	(1, 71.8541)	1.794510	0.1846
Anova F-test	(1, 103)	1.459759	0.2297

* $p < \alpha = 0.05$

The result of all the previously conducted tests is that there does not appear to be any statistically significant difference between the returns on equity of the ‘dual’ firms and the return on equity of the ‘separate’ firms.

For a simple linear regression like the one we have here, coefficient estimates the marginal contribution of the independent variable, in the case the duality or non duality of the firm, and the dependent variable, in this case return on equity, *ceteris paribus*. The coefficient estimated, should it be statistically significant, is considered to me the slope of the relation between the independent and the dependent variable. The linear relationship that is estimated is presented below:

$$Y = b \cdot X + e$$

Y is the dependents variable, in this case, return on equity

b is the slope of the independent variable

X is the independent variable, in this case, CEO-Chairman status

e is the error

At a probability of 0.22 on the coefficient of 13.71 on ROE, the null hypothesis of the regression that the ROE coefficient is zero, is not rejected. This means that one cannot say with certainty that the return on equity of the firm is affected by its CEO-Chairman status. Therefore there is no significant evidence that duality affects the return on equity of a firm.

F- statistic also measures null hypothesis that the coefficient is equal to zero. With a probability of 0.22 the null is once again not rejected and regression output shows no significant relation between the two variables, dependent and independent.

The R^2 is a measure of how well the model estimated fits the data we have and it is the square of the correlation coefficient of the depended variable.and the values derived from the model. Since the correlation coefficient should by default be between -1 and 1 the square of it should be between 0 and 1. The bigger the correlation the bigger the R^2 , and the bigger the R^2 the better our model fits the data. In our case the R^2 is rather small meaning that the regression estimated does not fit very well the data we have.

Table 8. Regression output for relationship between CEO duality and Return on Equity

Variable	Coefficient	Std.Error	t-statistic	Probability*
STATUS	13.71341	11.35024	1.208205	0.2297
C	-7.404575	7.512582	-0.985623	0.3266
R- squared	0.013974	F-statistic	1.459759	0.229735

* $p < \alpha = 0.05$

Interpretation of findings return on equity

To sum up the statistical tests conducted show that the dependent variable is not statistically significant at the 0.05 level. As a result the null hypothesis, return on equity is equal no matter what the CEO-Chairman status, cannot be rejected.

Additionally the output of the regression conducted showed that the variable coefficient is not statistically significant at a 0.05 confidence level, meaning that the null hypothesis is not rejected.

Consequently there does not seem to be any relationship between the CEO-Chairman status and the return on equity of the firm.

Hypothesis 2: Effects of Duality on return on assets.

Descriptive statistics, measures of normality, equalities and regression

Table 9 summarizes the stats of variable number one, return on assets for 105 shipping firms separated in two groups and altogether. The mean return on assets for all the companies on 2010 is 3.12 with a standard deviation of 7.64%. The highest mean of return on assets was scored by the 46 companies of dual structure at a standard deviation of 7.12. The separate status companies have a lower 2.73 to report for return on assets.

Skewness and kurtosis show the probability distribution the data have around their mean. The mean of returns on assets for all firms are presented here. Normally distributed data have a skewness of zero and a kurtosis of three.

For our return on assets we see that the 'dual' group has a negative skewness, as does the 'separate' group which leads to distributions with fat right tails. The data are not normally distributed and have a thicker tail to the right of the group's mean.

Kurtosis indicates the volatility of volatility and measures how the probability distribution peaks. The kurtosis of our data is in both cases higher than three even though for the 'separate' group it is much more volatile. In the 'dual' group kurtosis is 8.76 while for the other group is 16.68. So both their distributions have sharp peaks with longer tails.

Table 9: Descriptive statistics for the dependent variable, ROA

Statistical measures	Dual	Separate	Both groups
N	46	59	105
Mean	3.620754	2.736017	3.123616
Standard Deviation	7.121048	8.060892	7.640274
Skewness	-1.181307	-2.852374	-2.293638
Kurtosis	8.761970	16.68338	14.55913

The Lilliefors Watson and Anderson Darling tests are used to test the data sets for normality. These tests are based on the comparison between the empirical distribution and the specified theoretical distribution function. The null hypothesis is that there is no difference of return on assets between the groups. The alternative is that there is a difference. Table 10 shows the results of the tests. All three have a probability that is lower than α , so the null hypothesis is rejected by all three tests in favor of the alternative hypothesis. Therefore, the majority of the returns on assets for 2010 are distributed unevenly around the mean of the data, and this occurs in both cases.

Table 10: Normality tests for ROA

CEO-Chair	Lilliefors		Watson		Anderson-Darling	
Status	Statistic	Probability	Statistic	Probability	Statistic	Probability*
Dual	0.168129	0.0023	0.261206	0.0004	1.610771	0.0003
Separate	0.165318	0.0004	0.378781	0.0000	2.558198	0.0000

* $p < \alpha = 0.05$

In order to test if the error variances of return on assets are more or less at the same level the Levene and Siegel-Tukey tests are used. Again, the null hypothesis is that the variances of the two groups are equal. The alternative is that they are not equal. Both tests indicate that the return on assets for the two groups is not the same. The Levene test is taking the number 0.109 at a 0.7412 level of significance (Table 11), hence the null hypothesis is not rejected and the variances of the returns on assets

can be equal between the two groups. On the same path, the Siegel-Tukey test also does not reject the null hypothesis at a 0.6213 level of significance and equals to 0.4940. Therefore the variances between the two groups are equal.

Table 11: Tests of equality of Variances of ROA

Test	df	Statistic	Probability*
Siegel-Tukey		0.494077	0.6213
Levene	(1, 103)	0.109625	0.7412

* $p < \alpha = 0.05$

Returns on assets figures include histograms, and quantile-quantile plots and box plots, and are presented as Figure 7 through Figure 11 in Appendix B. These are used in order to provide a visual analysis of the data distribution. Similar to the results of the normality tests the histograms show no normality in the distribution and are skewed to the left so more annual returns on assets are above the mean annual return on assets. The quantile –quantile plot also show non normality in the data since the quantiles are in a different place than the normal distribution line even though the difference is not as big as in the case of return on equity. The box plots show that the variance that is indicated by the heights of the boxes is not homogeneous.

Moving on, we use a test of equality of medians to investigate whether there is any similarity between the two groups. The median test show whether there are irregular sample data around the median return on assets. Table 12 below, provides the median distributions.

Table 12: Median test frequencies ROA

Relative to median	CEO – Chair status	
	Dual	Separate
>Median	24	28
≤Median	22	31

Equality of means is tested under the null that the means are the same in the two groups in the Kruscal Wallis test.. The alternative hypothesis is that they are not. According to the results of the test, annual return on assets, at Chi-square of 0.2102 is not statistically significant since the probability is higher than α . Therefore we cannot reject the null hypothesis. The medians of the two groups are similar to each other. A conclusion that is also indicated by watching at the boxplot (Figure 11), where the lines are appearing to be at the same height, an indication that the means are no different from each other.

Table 13: Kruscal Wallis test of medians between series for ROA⁷

Measure	N	Median	Chi-Square ⁸	df	Probability*
Value	59	3.8000	0.210272	1	0.6466

* $p < \alpha = 0.05$

Equality of means is tested using the Welch and the Anova test. The null hypothesis is that the means of the two groups are equal. The alternative hypothesis is that the two means differ from each other. The Welch test shows that return on assets, with a statistic of 0.35, is not statistically significant having a probability level of 0.5525. On the same path the Anova test, at a statistic of 0.344, indicates no statistically significant basis to reject the null hypothesis. Therefore the null is not rejected and the means of the two groups can be considered the same. Table 7 below shows the results of the equality of means test on the return on assets.

Table 14: Test of equality of means for ROA

Test	df	Statistic	Probability*
Welch F-test	(1, 101.347)	0.355203	0.5525
Anova F-test	(1, 103)	0.344418	0.5586

* $p < \alpha = 0.05$

⁷ Grouping variable is the CEO-Chairman status

⁸ Kruscal Wallis test(non parametric)

The result of all the previously conducted tests is that there does not appear to be any statistically significant difference between the returns on assets of the ‘dual’ firms and the return on assets of the ‘separate’ firms.

For a simple linear regression like the one we have here, coefficient estimates the marginal contribution of the independent variable, in the case the duality or non duality of the firm, and the dependent variable, in this case return on assets, *ceteris paribus*. The coefficient estimated, should it be statistically significant, is considered to me the slope of the relation between the independent and the dependent variable. The linear relationship that is estimated is presented below:

$$Y = b \cdot X + e$$

Y is the dependents variable, in this case, return on assets

b is the slope of the independent variable

X is the independent variable, in this case, CEO-Chairman status

e is the error

At a probability of 0.55 on the coefficient of 0.884 on STATUS, the null hypothesis of the regression, that the STATUS coefficient is zero, is not rejected. This means that one cannot say with certainty that the return on assets of the firm is affected by its CEO-Chairman status. Therefore there is no significant evidence that duality affects the return on assets of a firm.

F-statistic also tests the null hypothesis that the coefficient is equal to zero. With a probability of 0.55 the null is once again not rejected and regression output shows no significant relation between the two variables, dependent and independent.

The R^2 is a measure of how well the model estimated fits the data we have. In our case the R^2 is rather small meaning that the regression estimated does not fit very well the data we have.

Table 15. Regression output for relationship between CEO duality and Return on Assets

Variable	Coefficient	Std.Error	t-statistic	Probability*
STATUS	0.884738	1.507550	0.586871	0.5586
C	2.736017	0.997829	2.741970	0.0072
R- squared	0.003333	F-statistic	0.344418	0.558575

* $p < \alpha = 0.05$

Interpretation of findings return on assets

To sum up the statistical tests conducted show that the dependent variable is not statistically significant at the 0.05 level. As a result the null hypothesis, return on assets is equal no matter what the CEO-Chairman status, cannot be rejected.

Additionally the output of the regression conducted showed that the variable coefficient is not statistically significant at a 0.05 confidence level, meaning that the null hypothesis is not rejected.

Consequently there does not seem to be any relationship between the CEO-Chairman status and the return on assets of the firm.

Hypothesis 3: Effects of Duality on return on invested capital.

Descriptive statistics, measures of normality, equalities and regression

Table 16 summarizes the stats of variable number one, return on invested capital for 105 shipping firms separated in two groups and altogether. The mean return on invested capital for all the companies on 2010 is 4.82 with a standard deviation of 9.011%. The highest mean of return on invested capital was scored by the 46 companies of dual structure at a standard deviation of 7.84. The separate status companies have a 4.45 to report for return on invested capital.

Skewness and kurtosis show the probability distribution the data have around their mean. Here we have the mean of returns on invested capital for all firms. Normally distributed data have a skewness of zero and a kurtosis of three.

For our return on invested capital we see that the ‘dual’ group has a negative skewness, as does the ‘separate’ group which leads to distributions with fat right tails. The data are not normally distributed and have a thicker tail to the right of the group’s mean.

The kurtoses of our data are in both cases higher than three even though for the ‘separate’ group it is much more volatile. In the ‘dual’ group kurtosis is 9.07 while for the other group is 13.56. So both their distributions have sharp peaks with longer tails.

Table 16: Descriptive statistics for the dependent variable, ROIC

Statistical measures	Dual	Separate	Both groups
N	46	59	105
Mean	5.303802	4.452284	4.825330
Standard Deviation	7.840152	9.879232	9.011507
Skewness	-1.324449	-2.012774	-1.879695
Kurtosis	9.079047	13.56050	13.24256

The Lilliefors Watson and Anderson Darling tests are used to test the data sets for normality. The null hypothesis is that there is no difference of return on invested capital between the groups. The alternative is that there is a difference. Table 17 shows the results of the tests. All three have a probability that is lower than α , so the null hypothesis is rejected by all three tests in favor of the alternative hypothesis. Therefore, the majority of the returns on invested capital for 2010 are distributed unevenly around the mean of the data, and this occurs in both cases.

Table 17: Normality tests for ROIC

CEO-Chair Status	Lilliefors		Watson		Anderson-Darling	
	Statistic	Probability	Statistic	Probability	Statistic	Probability*
Dual	0.136705	0.0310	0.185630	0.0045	1.305140	0.0019
Separate	0.141185	0.0051	0.358216	0.0000	2.217087	0.0000

$*p < \alpha = 0.05$

In order to test if the error variances of return on invested capital are more or less at the same level the Levene and Siegel-Tukey tests are used. The null hypothesis is that the variances of the two groups are equal. The alternative is that they are not equal. Both tests indicate that the return on invested capital for the two groups is not the same. The Levene test is taking the number 0.34 at a 0.5573 level of significance (Table 18), hence the null hypothesis is not rejected and the variances of the returns on invested capital can be equal between the two groups. On the same path, the Siegel-Tukey test also does not reject the null hypothesis at a 0.6442 level of significance and equals to 0.461. Therefore the variances between the two groups are equal.

Table 18: Tests of equality of Variances of ROIC

Test	df	Statistic	Probability*
Siegel-Tukey		0.461785	0.6442
Levene	(1, 103)	0.346617	0.5573

$*p < \alpha = 0.05$

Returns on invested capital figures include histograms, and quantile-quantile plots and box plots, are presented as Figure 12 through Figure 16 in Appendix B. Similar to the results of the normality tests the histograms show no normality in the distribution and are skewed to the left so more annual returns on invested capital are above the mean annual return on invested capital. The quantile –quantile plot also shows some normality in the middle but the edges fly off the normality line. The box plots have uneven heights which indicate that the variances are not homogeneous.

From the median tests firstly it is show whether there are irregular sample data around the median return on invested capital. Table 19 below, provides the median distributions.

Table 19: Median test frequencies ROIC

Relative to median	CEO – Chair status	
	Dual	Separate
>Median	25	27
≤Median	21	32

Equality of means is tested under the null hypothesis that the means are the same in the two groups. The alternative hypothesis is that they are not. According to the results of the test, annual return on invested capital, at Chi-square of 0.762100 is not statistically significant since the probability is higher than α . Therefore we cannot reject the null hypothesis. The medians of the two groups are similar to each other. The box plot however shows a slight difference in the means based on the lines in the middle of the boxes(Figure 16)

Table 20: Kruscal Wallis test of medians between series⁹ for ROIC

Measure	N	Median	Chi-Square ¹⁰	df	Probability*
Value	59	4.541700	0.762100	1	0.3827

* $p < \alpha = 0.05$

For the Anova and Welch tests the null hypothesis is that the means of the two groups are equal. The alternative hypothesis is that the two means differ from each other. The Welch test shows that return on invested capital, with a statistic of 0.24, is not statistically significant having a probability level of 0.6235. On the same path the Anova test, at a statistic of 0.229, indicates no statistically significant basis to reject the null hypothesis. Therefore the null is not rejected and the means of the two groups can be considered the same. Table 21 below shows the results of the equality of means test on the return on invested capital.

⁹ Grouping variable is the CEO-Chairman status

¹⁰ Kruscal Wallis test(non parametric)

Table 21: Test of equality of means for ROIC

Test	df	Statistic	Probability*
Welch F-test	(1, 102.959)	0.242463	0.6235
Anova F-test	(1, 103)	0.229077	0.6332

* $p < \alpha = 0.05$

The result of all the previously conducted tests is that there does not appear to be any statistically significant difference between the returns on invested capital of the ‘dual’ firms and the return on invested capital of the ‘separate’ firms.

Concerning the equation estimation, the linear relationship that is estimated is presented below:

$$Y = b \cdot X + e$$

Y is the dependent variable, in this case, return on invested capital

b is the slope of the independent variable

X is the independent variable, in this case, CEO-Chairman status

e is the error

At a probability of 0.63 on the coefficient of 0.85 on STATUS, the null hypothesis of the regression, that the STATUS coefficient is zero, is not rejected. Therefore there is no significant evidence that duality affects the return on invested capital of a firm.

With a probability of 0.63 on the F-statistic the null is once again not rejected and regression output shows no significant relation between the two variables, dependent and independent.

The R^2 is a measure of how well the model estimated fits the data. In our case the R^2 is small, meaning that the regression estimated does not fit very well the data we have.

Table 22. Regression output for relationship between CEO duality and Return on Invested capital

Variable	Coefficient	Std.Error	t-statistic	Probability*
STATUS	0.851518	1.779110	0.478620	0.6336
C	4.452284	1.177571	3.780905	0.0003
R- squared	0.002219	F-statistic	0.229077	0.633223

* $p < \alpha = 0.05$

Interpretation of findings return on invested capital

To sum up the statistical tests conducted show that the dependent variable is not statistically significant at the 0.05 level. As a result the null hypothesis, return on invested capital is equal no matter what the CEO-Chairman status, cannot be rejected.

Additionally the output of the regression conducted showed that the variable coefficient is not statistically significant at a 0.05 confidence level, meaning that the null hypothesis is not rejected.

Consequently there does not seem to be any relationship between the CEO-Chairman status and the return on invested capital of the firm.

Hypothesis 4: Effects of Duality on earnings before interest taxes depreciation and amortization.

Descriptive statistics, measures of normality, equalities and regression

Table 23 summarizes the stats of variable number one, earnings before interest taxes depreciation and amortization for 105 shipping firms separated in two groups and altogether. The mean earnings before interest taxes depreciation and amortization for all the companies on 2010 is 299.66 with a standard deviation of 599.07. The highest mean of earnings before interest taxes depreciation and amortization was scored by the 46 companies of dual structure at a standard deviation of 737.22. The separate status companies have an opposite 265.80 mean to report for earnings before interest taxes depreciation and amortization.

Skewness and kurtosis show the probability distribution the data have around their mean. Here we have the mean of returns on equity for all firms. Normally distributed data have a skewness of zero and a kurtosis of three.

For our earnings before interest taxes depreciation and amortization we see that the ‘dual’ group has a negative skewness, as does the ‘separate’ group which leads to distributions with fat right tails. The data are not normally distributed and have a thicker tail to the right of the group’s mean.

The kurtosis of our data is in both cases higher than three even though for the ‘separate’ group it is much more volatile. In the ‘dual’ group kurtosis is 26.44 while for the other group is 16.08 . So both their distributions have sharp peaks with longer tails.

Table 23: Descriptive statistics for the dependent variable, EBITDA

Statistical measures	Dual	Separate	Both groups
N	46	59	105
Mean	341.6316	265.80	299.6682
Standard Deviation	737.2290	462.9611	599.0746
Skewness	4.518171	3.453709	4.649113
Kurtosis	26.44651	16.08576	30.42635

In order to further analyze the distribution of our data three more normality tests are used, the Lilliefors, the Watson and the Anderson-Darling. Histograms and quantile quantile plots Additionally the Levene and the F-test are used to identify any equality of variances for our variables. The data distribution analysis is being made in order to decide what tests are going to be used for further analysis.

Table 24 shows the results of the Lilliefors, Watson and Anderson-Darling tests. All three have a probability that is lower than α , so the null hypothesis is rejected by all three tests in favor of the alternative hypothesis. Therefore, the majority of the

returns on equity for 2010 are distributed unevenly around the mean of the data, and this occurs in both cases.

Table 24: Normality tests for EBITDA

CEO-Chair Status	Lilliefors		Watson		Anderson-Darling	
	Statistic	Probability	Statistic	Probability	Statistic	Probability*
Dual	0.2974	0.0000	1.144281	0.0000	6.5296	0.0000
Separate	0.2618	0.0000	1.2628	0.0000	7.5112	0.0000

* $p < \alpha = 0.05$

On the equality of means tests Levene is taking the number 1.155 at a 0.2849 level of significance (Table 25), hence the null hypothesis is not rejected and the variances of the returns on equity can be equal between the two groups. On the same path, the Siegel-Tukey test also does not reject the null hypothesis at a 0.1626 level of significance and equals to 1.3964 . Therefore the variances between the two groups are equal.

Table 25: Tests of equality of Variances of EBITDA

Test	df	Statistic	Probability*
Siegel-Tukey		1.3964	0.1626
Levene	(1, 101)	1.1559	0.2849

* $p < \alpha = 0.05$

Returns on equity figures include histograms, and quantile-quantile plots and box plots, are presented as Figure 17 through Figure 21 in Appendix B. Similar to the results of the normality tests the histograms show no normality in the distribution and are skewed to the left so more annual returns on equity are above the mean annual earnings before interest taxes depreciation and amortization. The quantile – quantile plot also show non normality in the data. The box plots show that the variances are not homogeneous.

The median test shows whether there are irregular sample data around the median earnings before interest taxes depreciation and amortization. Table 26 below, provides the median distributions.

Table 26: Median test frequencies EBITDA

Relative to median	CEO – Chair status	
	Dual	Separate
>Median	24	27
≤Median	22	30

Equality of means is tested under the null that the means are the same in the two groups. The alternative hypothesis is that they are not. According to the results of the test, annual earnings before interest taxes depreciation and amortization, at Chi-square of 0.2351 is not statistically significant since the probability is higher than a. Therefore we cannot reject the null hypothesis. The medians of the two groups are similar to each other.

Table 27: Kruscal Wallis test of medians between series on EBITDA¹¹

Measure	N	Median	Chi-Square ¹²	df	Probability*
Value	59	106.37	0.2351	1	0.6277

* $p < \alpha = 0.05$

For the equality of means the null hypothesis is that the means of the two groups are equal. The alternative hypothesis is that the two means differ from each other. The Welch test shows that earnings before interest taxes depreciation and amortization, with a statistic of 0.3691, are not statistically significant having a probability level of 0.5454. On the same path the Anova test, at a statistic of 0.4054, indicates no statistically significant basis to reject the null hypothesis. Therefore the null hypothesis is not rejected and the means of the two groups can be considered the

¹¹ Grouping variable is the CEO-Chairman status

¹² Kruscal Wallis test(non parametric)

same. Table 28 below shows the results of the equality of means test on the earnings before interest taxes depreciation and amortization.

Table 28: Test of equality of means for EBITDA

Test	df	Statistic	Probability*
Welch F-test	(1, 72.3146)	0.3691	0.5454
Anova F-test	(1, 101)	0.4054	0.5257

* $p < \alpha = 0.05$

The result of all the previously conducted tests is that there does not appear to be any statistically significant difference between the returns on equity of the ‘dual’ firms and the earnings before interest taxes depreciation and amortization of the ‘separate’ firms.

For the regression, the linear relationship that is estimated is presented below:

$$Y = b \cdot X + e$$

Y is the dependent variable, in this case, earnings before interest taxes depreciation and amortization

b is the slope of the independent variable

X is the independent variable, in this case, CEO-Chairman status

e is the error

At a probability of 0.5257 the coefficient of 75.8286 on STATUS means that the null hypothesis of the regression, that the STATUS coefficient is zero, is not rejected. Therefore there is no significant evidence that duality affects the earnings before interest taxes depreciation and amortization of a firm.

With a probability of 0.5257 the null hypothesis of the F-stat is once again not rejected and the regression output shows no significant relation between the two variables, dependent and independent.

Concerning R-squared, it is rather small, meaning that the regression estimated does not fit very well the data we have.

Table 29. Regression output for relationship between CEO duality and Earnings before interest taxes depreciation and amortization

Variable	Coefficient	Std.Error	t-statistic	Probability
STATUS	75.8286	119.0838	0.6367	0.5257
C	265.8030	79.5816	3.3400	0.0012
R- squared	0.0039	F-statistic	0.4054	0.5257

* $p < \alpha = 0.05$

Interpretation of findings earnings before interest taxes depreciation and amortization

To sum up the statistical tests conducted show that the dependent variable is not statistically significant at the 0.05 level. As a result the null hypothesis, earnings before interest taxes depreciation and amortization is equal no matter what the CEO-Chairman status, cannot be rejected.

Additionally the output of the regression conducted showed that the variable coefficient is not statistically significant at a 0.05 confidence level, meaning that the null hypothesis is not rejected.

Consequently there does not seem to be any relationship between the CEO-Chairman status and the earnings before interest taxes depreciation and amortization of the firm.

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

Results

Our results suggest that there is no significant evidence of any relationship between the CEO duality and the performance of the shipping firms, as they are presented by the four variables chosen to complete this research.

All the variables used to complete this dissertation seem to be higher for dual firms but not statistically significant to support any supremacy of the aforementioned structure over the separate nature. Such results are also supported by recent studies such as the ones of Coles, McWilliams, & Sen, (2002) and Daily & Dalton, (1993) who found that return on equity and return on assets are greater for dual firms but not statistically significant.

The results in this dissertation are contingent with the conclusions of Boyd, (1995) and Brickley, Coles, & Jarrell, (1997) who have argued that there is no optimal board leadership structure and that CEO duality will benefit some firms while separation will be advantageous for others.

Finally, the results of our research comply with those of Iyengar & Zampelli, (2009) who support that a firm's selection of the dual governance structure is not consistent with either comparative advantage or the objective of maximizing firm performance.

Conclusions & Recommendations

The aim of this study was to explore to what extent CEO duality can affect corporate performance. A key motivating factor for this work was the significant prior research on this topic and also the differentiation of results. Many reports that are dealing with CEO duality and firm performance have arrived at inconclusive and contradictory conclusions. Although the findings reveal that board leadership has no direct impact on corporate performance, additional analysis demonstrates that the impact of CEO duality varies with industry type and firm performance. The variables used for the conduction of this research are generally thought to be reliable measures of the firms

profitability. With absolutely no conflicted results the tests conclude that there is no significant effect of the CEO-Chairman status on the performance of the shipping firms.

The results of this research are produced based on data collected from yahoo. finance, Thomson one and Bloomberg databases, and four financial ratios. As in most researches one should be careful not to generalize the outcome. Nevertheless its results can prove to be helpful trying to understand the general spirit under which a company, and more specifically a shipping company, can become profitable.

As for the validity of this dissertation, it is up to future research to determine if we have incorrectly compared the four financial ratios with the status of the firm, dual or non-dual. As for future reference we believe that it may be worthwhile to compare the results of the companies of the shipping sectors with other industrial sectors in order to create a more general idea of the corporate governance field.

CEO duality and scandals

The lingering dispute towards the combining responsibilities of CEO and chairman of the board is in the spotlight for many years. During 1980 there was a series of business scandals in the United Kingdom that strengthen the debate about the effects of the separation or the combination of these two management positions. This series of scandals raised many questions about the effectiveness of corporate governance. Aftereffect of these questions was the creation of Cadbury Committee, which established in order to research in depth the structure of corporate governance. As Dalton and Kesner (1987) state, in recent years boards of directors have received caustic criticisms, due to these corporate scandals.

One of these important business scandals, mentioned above, was the manipulation of stocks in Guinness. In this scandal a number of eminent business leaders were jailed because they participated in a conspiracy to inflate the value of Guinness shares during the controversial takeover for Distillers. This dealing was the largest takeover in the history of United Kingdom (Boyd, 1996).

One of the most arrant scandals was the Robert Maxwell case. Robert Maxwell took part in the theft of over \$1 billion in employee pension funds. These funds were used to uphold his ailing business empire. This case was the most important of all the cases which involve abuse of power by the founder of a large public firm who simultaneously acted as a CEO and chairman of the board (Boyd, 1996). As (Boyd, 1996) reports there was a lack of control on the pay received by the CEO. Furthermore as it was considered, CEOs were imposed their own pay rates and their rewards were defined more by greed than by any aim for better performance.

On the United States in 1992 GM lost 23.5 billion, the largest loss ever for a fortune 500. The market share of GM dropped at 34.9% and the shareholders equity at 6.2 billion, from a peak of 36 billion in 1988 (Baliga & Moyer, 1996). This significant decline of the value of GM can attribute to many causes. Those who supported the independence of the board stated that the decline in value of GM accrued to the inability of the firm to adapt to the continuously changing environment. And this inability was due to the fact that the CEO of GM (Roger Smith) was and the chairman of the board, confined the board from applying efficient and appropriate strategies.

Another case is the IBM which also had gone through some tough times. IBM which was the most powerful firm in the computing technology dropped its market value from 70% to 18%. This loss in market share resulted in a loss of approximately 5 billion in January of 1993 (Baliga, Moyer & Rao, 1996). Dell, with a new way of servicing consumers, causes IBM significant market losses. Akers, the CEO and the chairman of the board of IBM, was blamed because he couldn't manage evaluate the firm's performance.

Consequently the Gadbury committee was created in order to investigate these business scandals and to give guidance related to efficient corporate governance. The Cadbury committee illustrates that a reduction in the power of executive directors, a greater role for non-executive directors, changes in board operations and a more active role of auditors, can help to ameliorate the effectiveness of corporate governance.

Co-CEO

The situation in which the executive leadership is delegated to two officers is called Co-CEO and is a rare form of organizational structure in modern corporations. In his recent study William Mercer found that only a small percentage of firms had Co-CEO management structure. This particular type of leadership resulted from co-founders or from transfer of executive leadership to two siblings. Another source from which Co-CEO management structure accrued is the mergers of the organizations. It is supported that the firms with Co-CEO structure arising from mergers operate for short period of time, whereas firms with Co-CEO structure arising from co-founders may last for longer periods of time.

This type of management structure is unique because Co-CEOs share executive leadership, distinguishing this form of leadership from CEO duality and CEO-COO. As Steven A. Dennis, Dana Ramsey and Craig Turner (2009) advocated in their research, Co-CEOs are not related to any theories of management, such as task complexity, industry differentiation and CEO characteristics. They indicated that the only significant factor that affects the structure of the firm is if the CEO is also the Chairman of the board. In this case is more likely for the firms to have Co-CEO structure. Additionally Co-CEOs structures should not be grouped together with other forms of CEO duality, because this particular type of management structure is very different comparing with other structures, in terms of relationship and of their determinants. The results of many reports also indicated that the firm's stock price arise if the organization announces the existence of Co-CEO. On the contrary when a firm announces it has abandoned the Co-CEO structure, its stock price reduced to a great point.

In conclusion, due to the specific characteristics of Co-CEO structure it is up to future research to determine the reasons why this structure arises and how Co-CEO affects firm performance.

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APPENDIX A: CEO-CHAIRMAN STATUS OF 105 COMPANIES
DURING THE FISCAL YEAR END 2010

Table 30. Chief Executive Officer-Chairman status for 105 shipping firms in year 2010

Case #	Company	Status	ROE	ROA	ROIC	EBITDA(mln)
1	B+H Ocean Carriers Ltd	dual	9,40	3,94	7,64	\$ 29,59
2	Bollor	dual	9,63	4,08	3,75	\$ 586,75
3	China COSCO Holdings Company Limited	dual	15,50	4,77	5,10	\$ 1.563,00
4	China Shipping Container Lines	dual	15,45	9,01	10,03	\$ 829,40
5	Costamare Inc. [CMRE]	dual	31,40	4,59	9,47	\$ 235,41
6	Crude Carriers Corp. [CRU]	dual	7,13	4,73	6,43	\$ 24,57
7	Danaos Corporation [DAC]	dual	-25,65	-3,09	2,25	\$ 232,80
8	Deutsche Post AG	dual	27,20	7,01	14,40	\$ 4.636,52
9	Diana Shipping Inc. [DSX]	dual	12,09	8,86	9,32	\$ 185,12
10	DryShips Inc. [DRYS]	dual	5,66	2,73	5,44	\$ 554,43
11	Eagle Bulk Shipping Inc. [EGLE]	dual	4,17	1,53	4,51	\$ 134,87
12	Euroseas Ltd. [ESEA]	dual	-2,94	-2,05	-1,85	\$ 17,27
13	FreeSeas Inc. [FREE]	dual	-16,31	-7,96	-6,97	\$ 26,50
14	Frontline Ltd. [FRO]	dual	21,69	4,30	7,73	\$ 491,26
15	Grand Power Logistics Group Inc.	dual	-6,29	-1,78	-1,58	\$ 0,16

16	Grupo TMM, S.A.B. [TMM]	dual	-84,68	-7,64	-0,26	\$	90,79
17	Hanjin Shipping Co., Ltd.	dual	12,53	3,26	9,73	\$	868,12
18	Hapag-Lloyd AG	dual	16,97	6,74	13,20	\$	-4,92
19	I.M. Skaugen SE	dual	6,47	2,94	4,04	\$	60,47
20	James J.Boyle & Co	dual	17,64	7,45	9,90	\$	-
21	Kirby corporation (KEX)	dual	10,43	6,77	8,88	\$	306,29
22	Mainfreight Inc	dual	12,45	7,42	9,82	\$	56,97
23	MISC Berhad	dual	3,07	2,60	2,90	\$	764,65
24	Navios Maritime Holdings Inc	dual	15,36	7,94	8,43	\$	232,99
25	Navios Maritime Partners L.P	dual	17,48	10,63	11,16	\$	107,57
26	Odjfell ASA	dual	-9,83	-1,31	-1,45	\$	168,83
27	Orient Overseas (International) limited	dual	39,25	23,12	25,66	\$	1.144,69
28	Paragon Shipping Inc	dual	4,66	3,51	3,65	\$	66,80
29	Premuda Spa	dual	5,36	3,17	3,40	\$	58,54
30	Rand Lofistics	dual	2,54	4,82	5,84	\$	21,02
31	Regional Container Lines Public Company	dual	3,76	3,19	3,57	\$	33,48
32	Safe bulkers Inc	dual	66,39	16,94	19,06	\$	126,26

33	Scorpio Tankers Inc	dual	-1,73	-0,28	-0,28	\$	11,59
34	SEKO Worldwide	dual	2,51	1,57	2,36	\$	1,49
35	Ship Finance International Limited	dual	21,00	8,99	9,48	\$	222,98
36	TBS International Limited	dual	-58,68	-25,89	-27,97	\$	90,63
37	Tidewater Inc	dual	11,02	8,27	9,82	\$	342,34
38	TOP ships Inc	dual	1,05	2,46	2,58	\$	51,03
39	Ultrapetrol (Bahamas) Limited	dual	-1,96	1,53	1,61	\$	53,09
40	Wan Hai Lines LTD	dual	18,71	9,07	11,81	\$	332,86
41	Yang Ming Marine Transport Corporation	dual	31,94	10,52	12,10	\$	515,22
42	TNT EXPRESS N.V	dual	2,30	1,81	3,00	\$	516,05
43	KAWASAKI KISEN	dual	-21,38	-6,08	-7,31	\$	-553,96
44	MTSUI O.S.K LINES LIMITED	dual	1,98	1,14	1,43	\$	71,69
45	PRECIOUS SHIPPING PUBLIC COMPANY	dual	5,35	5,34	5,48	\$	56,27
46	TEEKAY OFFSHORE PARTNERS	dual	30,11	5,87	6,65	\$	353,56
47	A.P. Moeller - Maersk A/S	separate	16,02	7,35	10,20		
48	Aktieselskabet Dampskibsselskabet TORM	separate	-11,45	-4,15	-2,87	\$	106,37
49	Alexander & Baldwin, Inc.	separate	8,28	3,77	3,60	\$	216,00

50	Algoma Central Corporation	separate	7,32	4,54	6,63	\$	80,38
51	Aramex PJSC	separate	12,09	9,40	12,41	\$	75,79
52	Aspo Plc	separate	15,24	5,07	8,43	\$	35,41
53	Attica Holdings S.A.	separate	-10,47	-5,52	-4,36	\$	-3,27
54	Baltic Trading Limited	separate	0,03	0,03	0,03	\$	17,70
55	Braemar Shipping Services pl	separate	17,27	8,87	20,77	\$	24,12
56	Capital Product Partners L.P.	separate	8,38	2,36	7,43	\$	83,72
57	China Merchants Holdings (International) Company Limited	separate	16,19	8,98	3,19	\$	408,56
58	China Shipping Development Co. Ltd.	separate	7,81	4,60	4,54	\$	504,06
59	Clarkson PLC	separate	22,05	9,02	17,39	\$	55,49
60	CMA CGM	separate	59,87	12,79	25,51	\$	2.565,21
61	DFDS A/S	separate	10,19	4,40	5,71	\$	226,80
62	DHT Holdings, Inc. [DHT]	separate	3,28	1,28	4,88	\$	51,51
63	DSV Air & Sea, Inc.	separate	19,65	5,23	13,03	\$	496,09
64	Euronav N.V.	separate	1,83	0,72	3,25	\$	256,00
65	Evergreen Marine Corporation	separate	25,22	17,82	0,19	\$	54,79
66	Excel Maritime Carriers Ltd. [EXM]	separate	15,94	8,37	10,41	\$	448,43

67	Exmar N.V.	separate	3,49	0,76	4,54	\$	176,37
68	Federal Express Corporation	separate	10,00	5,55	10,38	\$	2.131,00
69	Financiere de l'Odet	separate	8,44	1,94	3,73	\$	584,54
70	Finnlines Oyj	separate	0,52	0,15	1,12	\$	114,02
71	Genco Shipping & Trading Limited [GNK]	separate	13,70	5,12	8,17	\$	344,17
72	General Maritime Corporation [GMR]	separate	-62,17	-13,43	-11,11	\$	101,79
73	Global Ship Lease, Inc. [GSL]	separate	-1,22	-0,40	1,23	\$	108,91
74	Globus Maritime Limited [GLBS]	separate	5,19	2,96	4,16	\$	16,02
75	Golar LNG Partners LP [GMLP]	separate	35,53	5,82	10,82	\$	122,37
76	Goldenport Holdings Inc.	separate	-0,06	-0,03	1,25	\$	42,20
77	Horizon Lines, Inc. [HRZ]	separate	-82,18	-7,22	-5,44	\$	90,15
78	I.M. Skaugen SE	separate	-14,87	-4,16	-0,51	\$	-4,92
79	Irish Continental Group plc	separate	23,61	14,21	10,02	\$	56,65
80	K-Sea Transportation Partners L.P	separate	-33,59	-9,99	-11,14	\$	55,96
81	Kintensu World Express Inc	separate	7,27	4,25	5,81	\$	29,77
82	Knightsbridge Tankers Limited	separate	12,52	9,26	9,51	\$	63,39
83	Kuehhe Nagel International AG	separate	25,88	10,56	24,63	\$	998,62

84	Maersk A/S	separate	16,02	8,32	10,48		
85	Neptune Orient Lines Limited	separate	15,52	8,46	11,86	\$	849,81
86	NewLead Holdings Ltd	separate	-237,17	-41,42	-46,38	\$	27,50
87	Nippon Express Co.LTD	separate	2,62	1,22	1,71	\$	621,80
88	Nippon Yusen Kabushiki Kaisha	separate	12,09	4,37	5,34	\$	-208,48
89	Omega Navigation Enterprises Inc	separate	3,47	2,32	2,41	\$	38,36
90	Overseas Shipholding Group Inc	separate	-7,30	-2,31	-2,60	\$	117,94
91	Pacific Basin Shipping Limited	separate	7,02	5,89	6,25	\$	210,63
92	Panalpina Welttransport (Holding) AG	separate	-3,29	-1,34	-2,98	\$	59,73
93	SEACOR Holdings INC	separate	13,07	7,30	10,36	\$	526,62
94	Seaspan Corporation	separate	-11,34	-1,47	-1,86	\$	289,50
95	Sinotrans Limited	separate	6,14	6,02	6,14	\$	148,87
96	Star Bulk Carriers Corporation	separate	-1,09	0,06	0,06	\$	84,23
97	StealthGas Inc	separate	3,83	2,85	3,03	\$	48,97
98	Stolt-Nielsen Limited	separate	7,31	6,06	4,28	\$	278,63
99	Teekay Corporation	separate	-12,66	-1,35	-1,56	\$	692,12
100	Teekay LNG Partners L.P	separate	9,15	3,10	3,64	\$	264,14

101	Teekay Tankers Ltd	separate	3,72	2,38	2,47	\$	82,00
102	Trailer bridge Inc	separate	-491,75	3,53	3,93	\$	69,00
103	Tsakos Energy Navigation Limited	separate	2,05	2,99	3,14	\$	13,89
104	UK Mail Group plc	separate	22,40	10,37	19,96	\$	161,59
105	Yamato Holdings Co ltd	separate	6,53	3,80	5,45	\$	39,75

APPENDIX B. FIGURES OF DEPENDENT VARIABLE DISTRIBUTIONS

Figure 2. Return on equity histogram and stats for dual companies

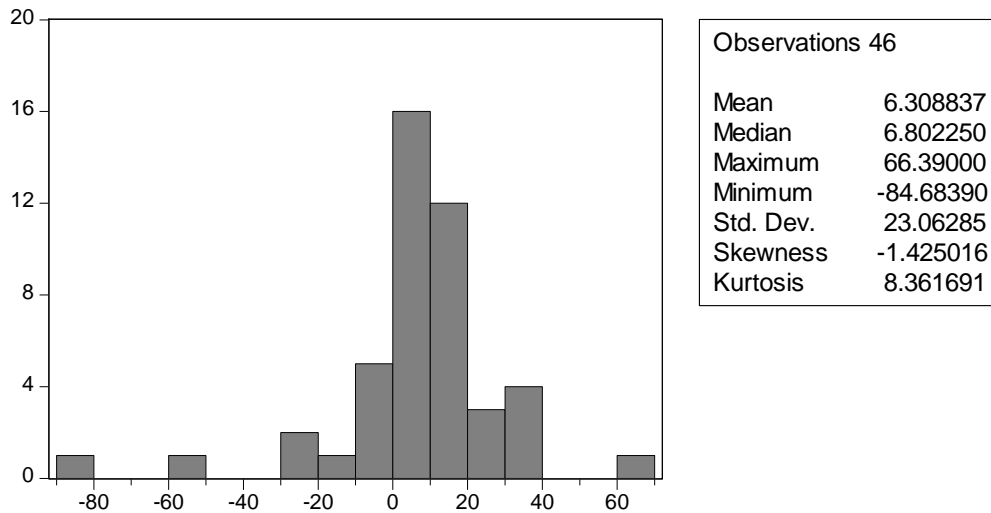


Figure 3. Return on equity quantile-quantile plot for dual firms

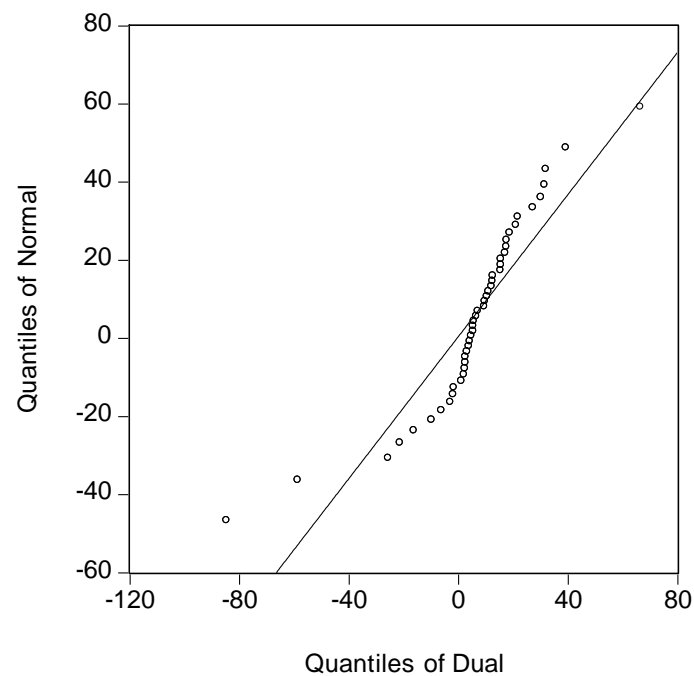


Figure 4. Return on equity histogram for separate companies

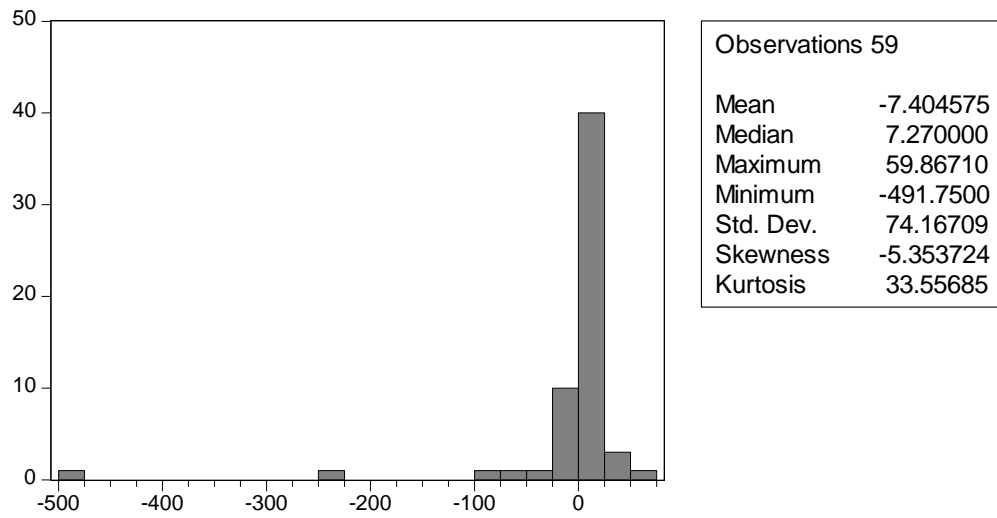


Figure 5. Return on equity quantile-quantile plot separate

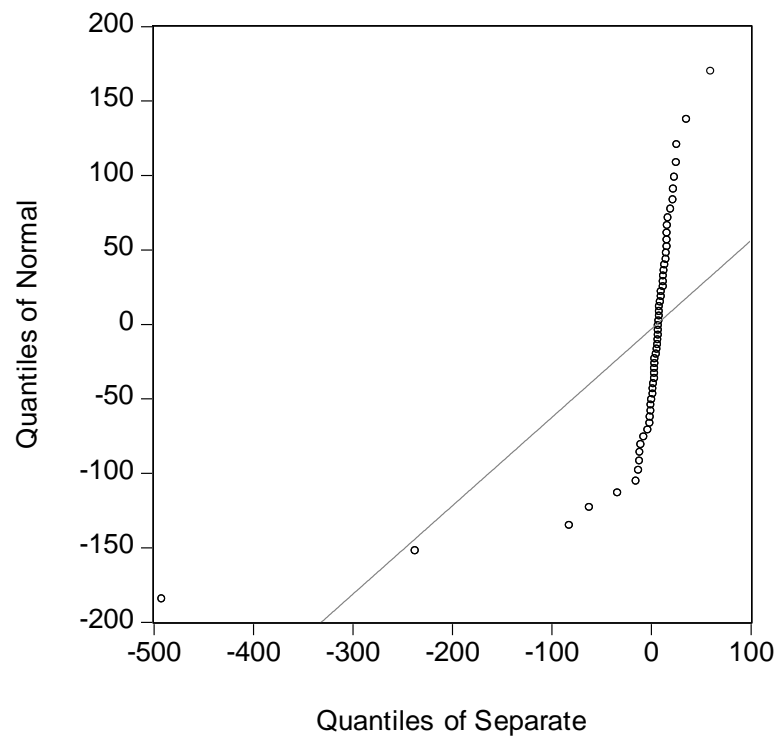


Figure 6. Boxplot of Return on equity for both groups

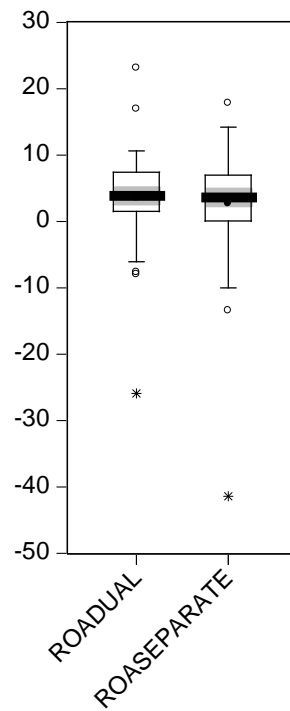


Figure 7. Return on assets histogram and stats for dual companies

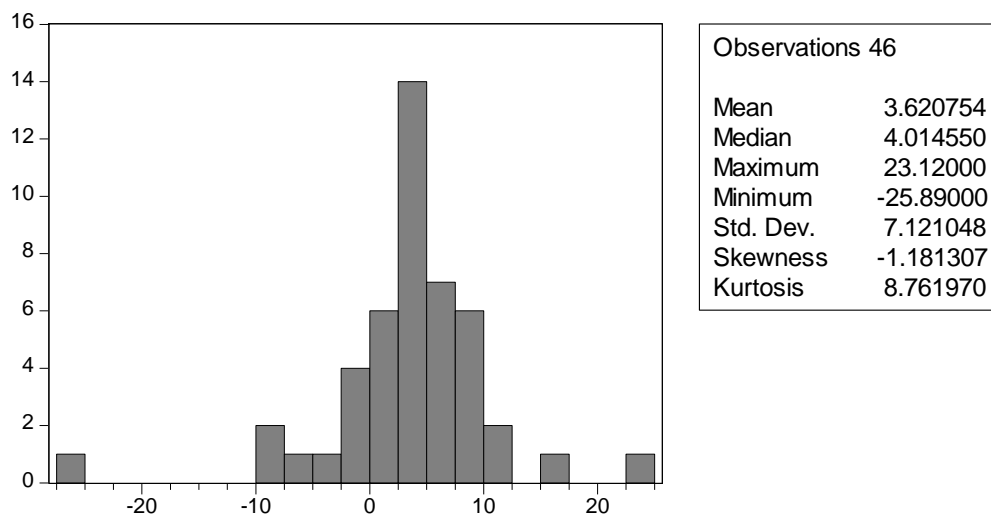


Figure 8. Return on assets quantile-quantile plot for dual companies

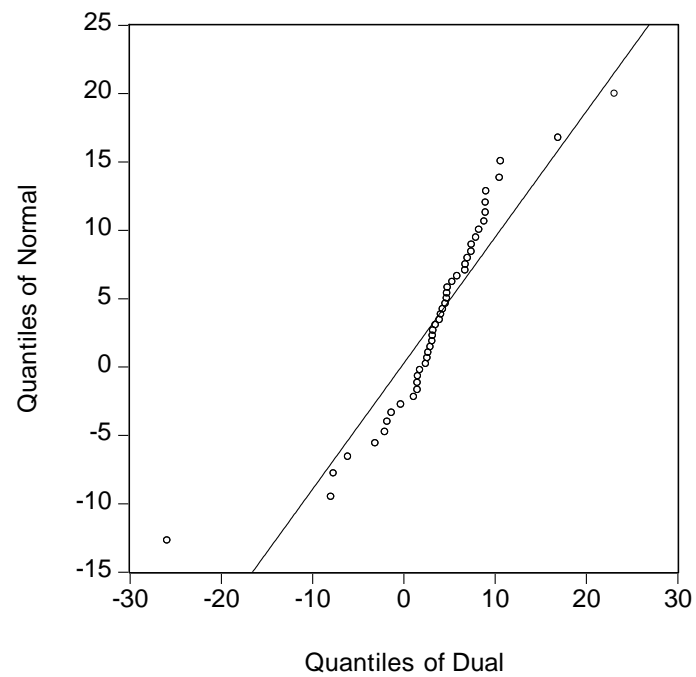


Figure 9. Return on assets histogram and stats for separate companies

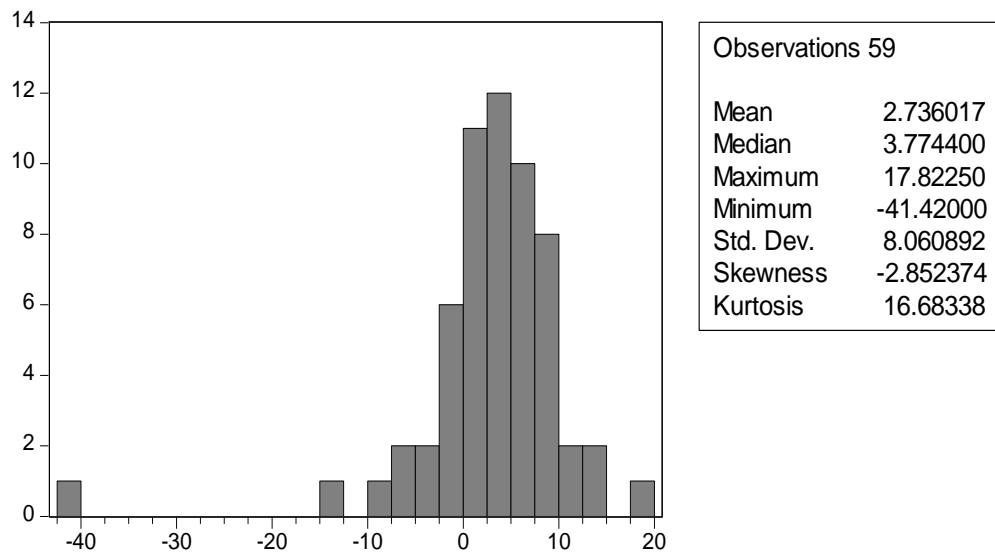


Figure 10. Return on assets quantile-quantile plot for separate companies

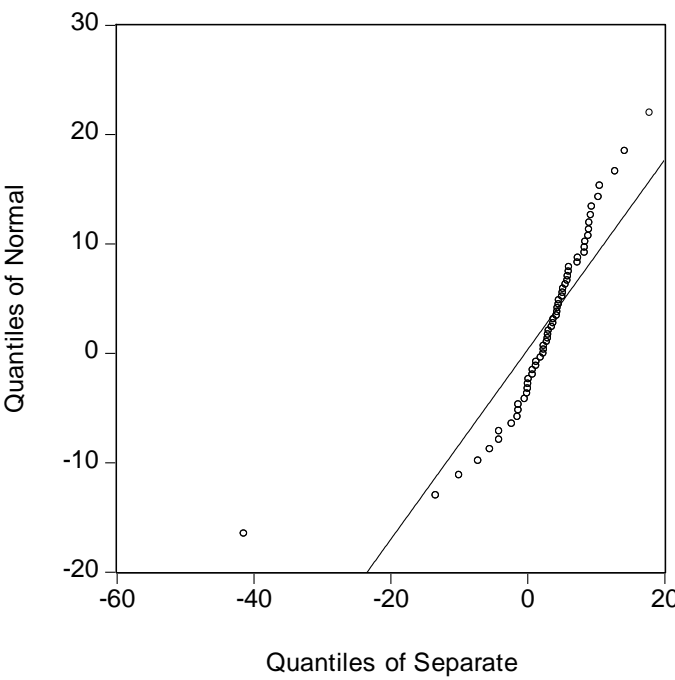


Figure 11. Return on assets boxplot for both groups

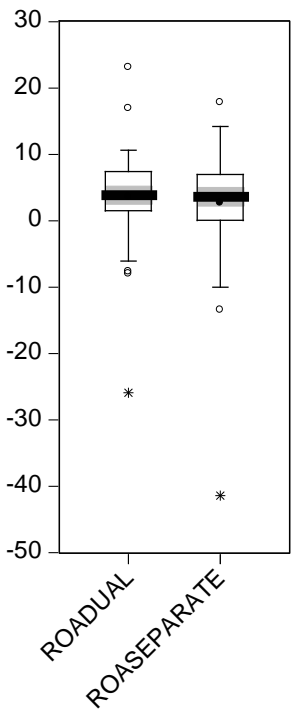


Figure 12. Return on invested capital histogram and stats for dual companies

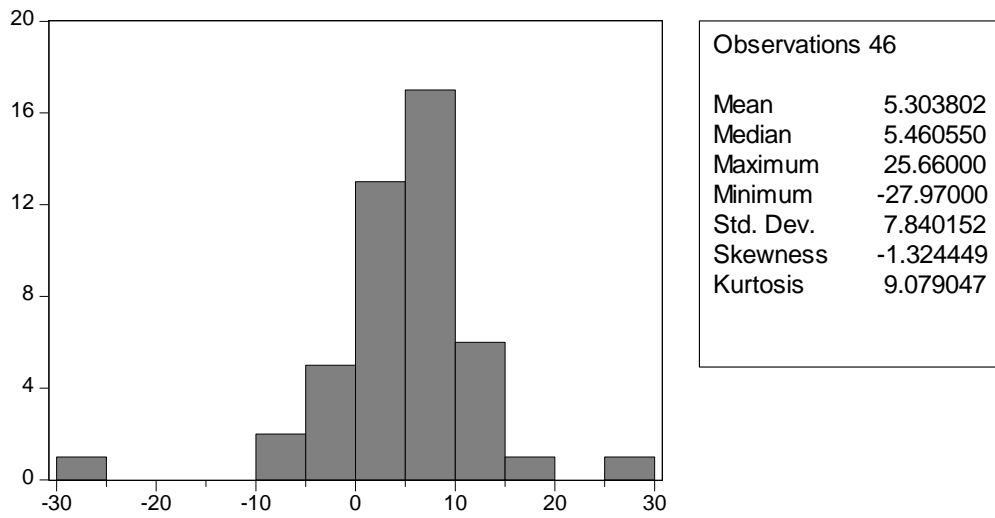


Figure 13. Return on invested capital quantile-quantile plot for dual companies

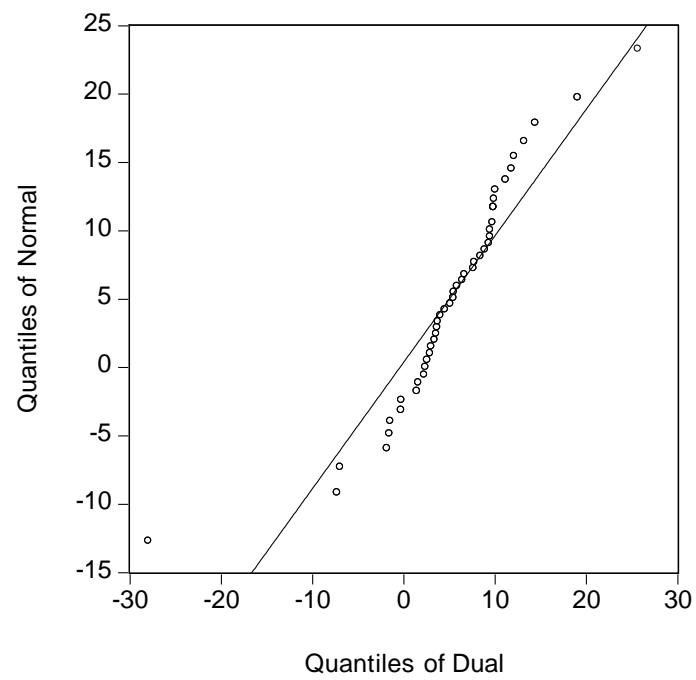


Figure 14. Return on invested capital histogram for separate companies

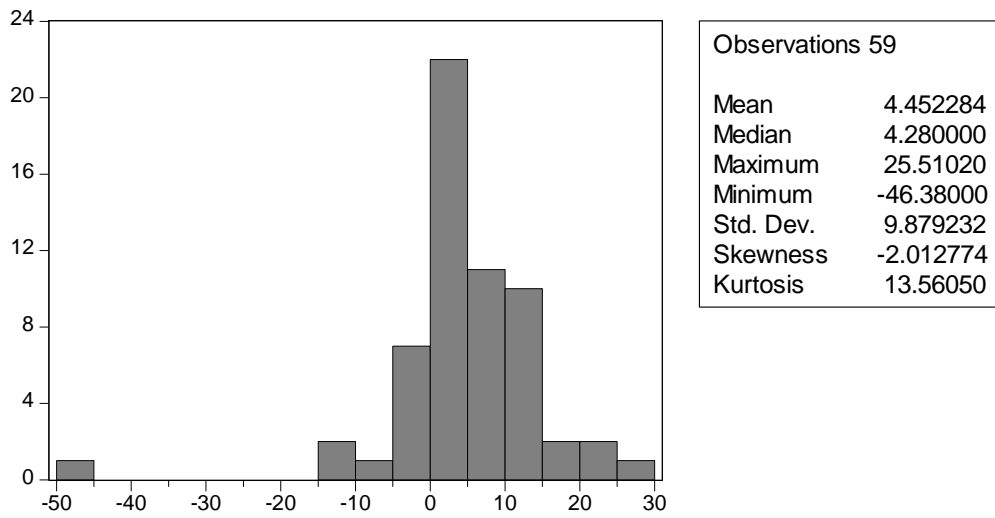


Figure 15. Return on invested capital quantile-quantile plot

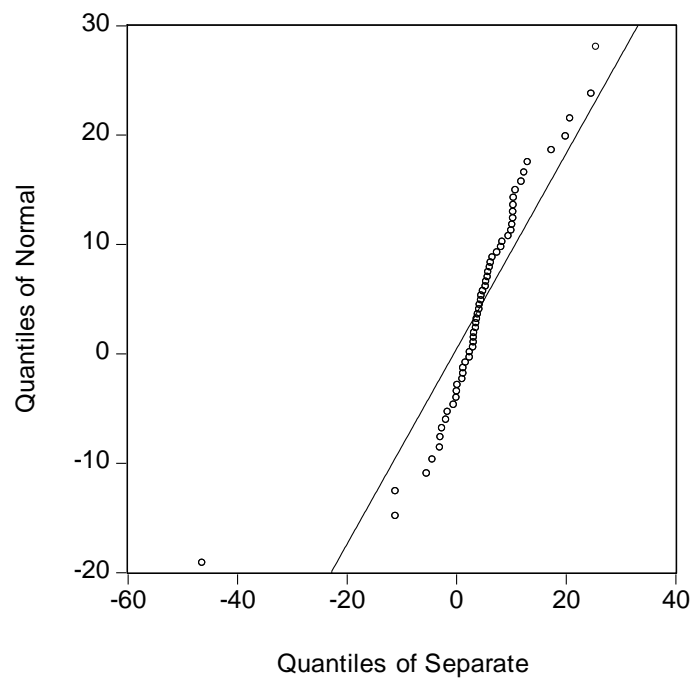


Figure 16. Return on invested capital for both groups

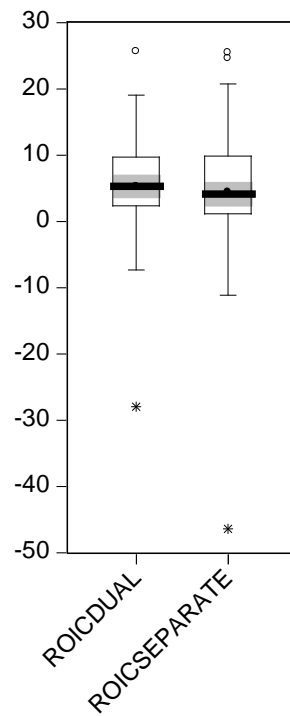


Figure 17. Earnings before interest taxes depreciation and amortization histogram and stats for dual companies

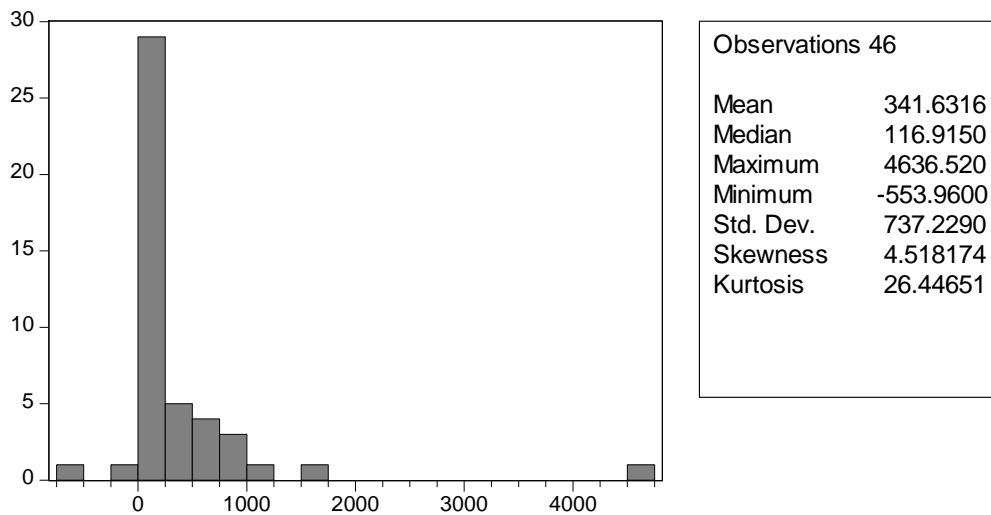


Figure 18. Earnings before interest taxes depreciation and amortization quantile-quantile plot for dual companies

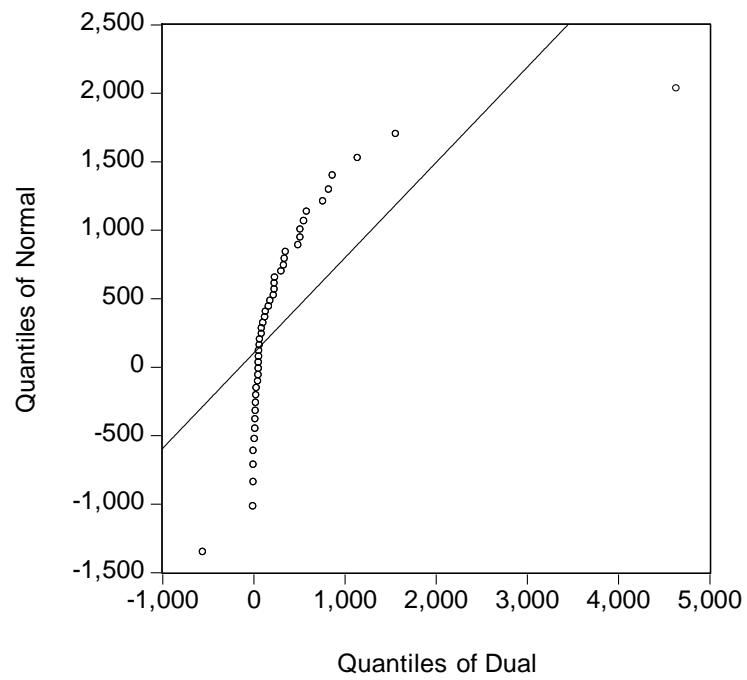


Figure 19. Earnings before interest taxes depreciation and amortization histogram and stats for separate companies

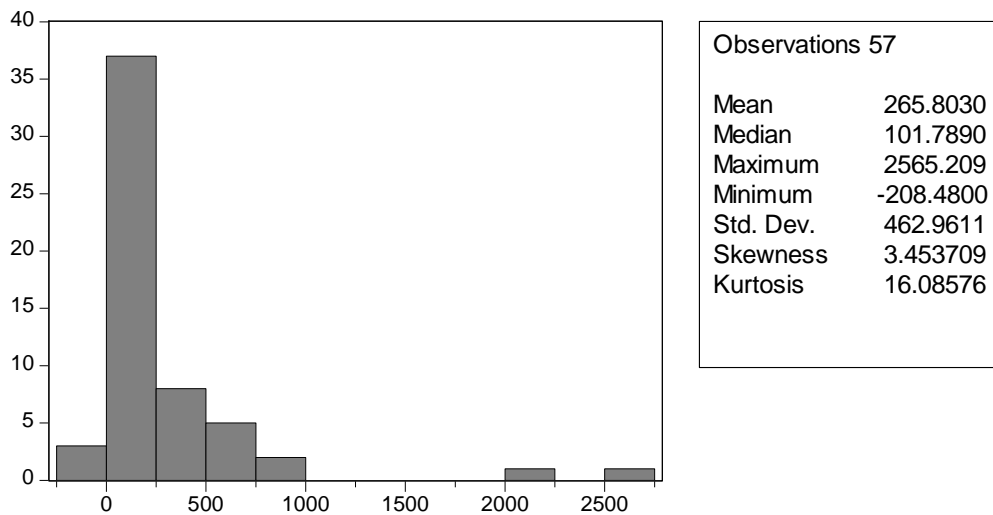


Figure 20. Earnings before interest taxes depreciation and amortization quantile-quantile plot for separate companies

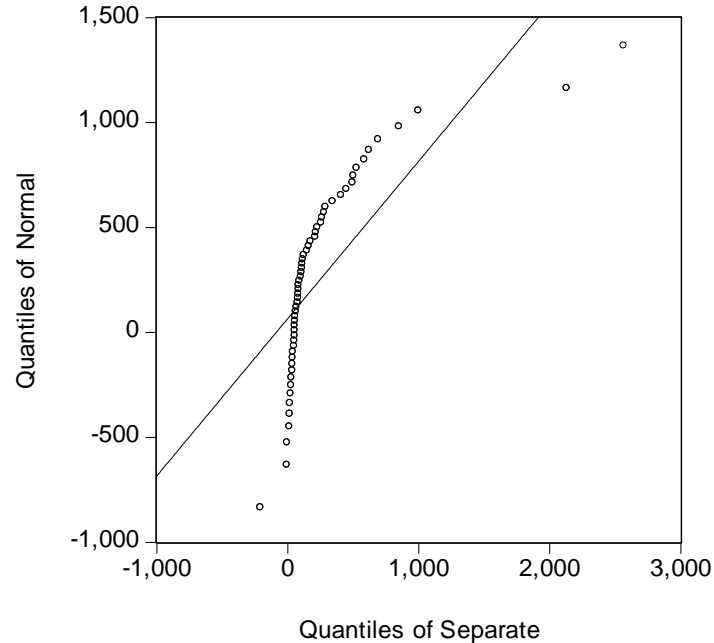


Figure 21. Earnings before interest taxes depreciation and amortization boxplot for both groups

